

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

API 47 - 085 - 10146 County Ritchie District Clay
Quad Pennsboro 7.5' Pad Name Charlene Field/Pool Name ----
Farm name Linda C. Dewberry Trust Well Number Bow 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 4,350,046m Easting 503,134m
Landing Point of Curve Northing 4,350,104.66m Easting 503,144.81m
Bottom Hole Northing 4,352,223m Easting 502,296m

Elevation (ft) 1118' 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 9/29/2014 Date drilling commenced 10/14/2014 Date drilling ceased 12/16/2014
Date completion activities began 3/21/2015 Date completion activities ceased 5/29/2015
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 250', 260' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1017', 1613', 3233' Void(s) encountered (Y/N) depths N
Coal depth(s) ft None Identified Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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Reviewed by:

JK
10/23/2015

API 47-085 - 10146

Farm name Linda C. Dewberry Trust

Well number Bow Unit 1H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade w/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	30"	20"	40'	New	94#/J-55	N/A	Y
Surface	17-1/2"	13-3/8"	333'	New	48#/H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2483'	New	36#/J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	13,839'	New	23#/P-110	N/A	Y
Tubing		2-3/8"	6470'		4.7#/N-80		
Packer type and depth set		N/A					

Comment Details _____

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	151 sx	15.6	1.18	38 Cu. Ft.	0'	8 Hrs.
Surface	Class A	396 sx	15.6	1.18	231 Cu. Ft.	0'	8 Hrs.
Coal							
Intermediate 1	Class A	975 sx	15.6	1.18	778 Cu. Ft.	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	856 sx (Lead), 1169 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.44 (Lead), 1.80 (Tail)	2716 Cu. Ft.	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 13,839' MD, 6405' TVD (BHL); 6429' TVD (Deepest Point Drilled)

Loggers TD (ft) 13,791' MD

Deepest formation penetrated Marcellus Shale

Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 5800'

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

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 _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED N/A

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API 47-085-10146 Farm Name Linda C. Dewberry Trust Well Number Bow Unit 1H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	21-Mar-15	13,582	13,750	60	Marcellus
2	29-Apr-15	13,383	13,551	60	Marcellus
3	30-Apr-15	13,185	13,352	60	Marcellus
4	1-May-15	12,986	13,153	60	Marcellus
5	1-May-15	12,787	12,954	60	Marcellus
6	1-May-15	12,588	12,756	60	Marcellus
7	1-May-15	12,389	12,557	60	Marcellus
8	2-May-15	12,190	12,358	60	Marcellus
9	2-May-15	11,991	12,159	60	Marcellus
10	2-May-15	11,792	11,960	60	Marcellus
11	2-May-15	11,593	11,761	60	Marcellus
12	2-May-15	11,394	11,562	60	Marcellus
13	3-May-15	11,195	11,363	60	Marcellus
14	3-May-15	10,996	11,164	60	Marcellus
15	3-May-15	10,797	10,965	60	Marcellus
16	3-May-15	10,598	10,766	60	Marcellus
17	3-May-15	10,399	10,567	60	Marcellus
18	4-May-15	10,201	10,368	60	Marcellus
19	4-May-15	10,002	10,169	60	Marcellus
20	4-May-15	9,803	9,970	60	Marcellus
21	5-May-15	9,604	9,771	60	Marcellus
22	5-May-15	9,405	9,573	60	Marcellus
23	6-May-15	9,206	9,374	60	Marcellus
24	6-May-15	9,007	9,175	60	Marcellus
25	6-May-15	8,808	8,976	60	Marcellus
26	6-May-15	8,609	8,777	60	Marcellus
27	7-May-15	8,410	8,578	60	Marcellus
28	7-May-15	8,211	8,379	60	Marcellus
29	7-May-15	8,012	8,180	60	Marcellus
30	7-May-15	7,813	7,981	60	Marcellus
31	7-May-15	7,614	7,782	60	Marcellus
32	8-May-15	7,415	7,583	60	Marcellus
33	8-May-15	7,216	7,384	60	Marcellus
34	8-May-15	7,018	7,185	60	Marcellus
35	8-May-15	6,819	6,986	60	Marcellus
36	8-May-15	6,620	6,787	60	Marcellus

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API 47-085-10146 Farm Name Linda C. Dewberry Trust Well Number Bow Unit 1H

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	17-Apr-15	62.2	7,411	NA	5,980	205,300	5,767	N/A
2	29-Apr-15	62.5	7,119	NA	4,299	212,800	5,856	N/A
3	30-Apr-15	61.5	7,057	5,753	4,384	175,400	6,548	N/A
4	1-May-15	34.5	7,927	5,770	4,752	4,900	6,406	N/A
5	1-May-15	62.4	6,805	5,256	3,009	224,400	6,712	N/A
6	1-May-15	61.5	6,916	5,591	4,716	186,700	6,415	N/A
7	1-May-15	63.5	6,711	5,353	4,795	240,800	6,493	N/A
8	2-May-15	63.7	6,739	5,395	4,905	241,200	6,543	N/A
9	2-May-15	66.9	6,683	5,140	5,329	235,400	6,323	N/A
10	2-May-15	67.5	6,836	4,974	4,616	202,300	6,713	N/A
11	2-May-15	62.8	6,674	5,166	4,039	234,300	6,357	N/A
12	2-May-15	63.1	6,712	5,450	3,773	240,350	6,357	N/A
13	3-May-15	62.9	6,830	5,240	4,829	137,050	6,589	N/A
14	3-May-15	66.7	7,191	5,309	4,526	174,450	6,540	N/A
15	3-May-15	65.9	6,518	5,238	4,490	196,300	6,289	N/A
16	3-May-15	64.0	6,467	5,273	4,450	240,100	6,337	N/A
17	3-May-15	63.5	6,588	5,260	4,262	229,000	6,168	N/A
18	4-May-15	64.7	6,445	5,693	3,973	243,820	6,350	N/A
19	4-May-15	67.0	6,620	5,239	4,799	214,620	5,905	N/A
20	4-May-15	63.9	6,627	5,341	3,768	240,500	6,280	N/A
21	5-May-15	65.8	6,707	5,349	4,445	210,380	6,671	N/A
22	5-May-15	61.8	6,942	6,255	4,503	154,800	6,195	N/A
23	6-May-15	63.8	7,133	6,201	5,103	233,600	6,351	N/A
24	6-May-15	60.6	6,550	5,343	4,897	150,860	6,365	N/A
25	6-May-15	62.7	6,743	5,293	4,085	187,780	6,415	N/A
26	6-May-15	63.5	6,447	5,657	3,647	239,700	6,227	N/A
27	7-May-15	62.7	6,217	5,171	4,126	240,380	6,158	N/A
28	7-May-15	62.3	6,217	5,643	4,965	232,940	6,021	N/A
29	7-May-15	63.2	6,723	5,817	4,183	210,540	6,402	N/A
30	7-May-15	63.1	6,563	5,455	4,473	235,100	6,084	N/A
31	7-May-15	64.5	6,273	6,006	4,503	234,700	6,020	N/A
32	8-May-15	63.2	6,774	5,417	4,689	207,460	6,410	N/A
33	8-May-15	62.8	6,762	5,783	4,639	178,300	6,175	N/A
34	8-May-15	65.2	6,431	6,365	4,938	241,040	6,113	N/A
35	8-May-15	57.5	6,788	5,908	3,524	134,900	6,373	N/A
36	8-May-15	64.8	6,843	6,018	3,378	239,650	6,637	N/A
	AVG=	62.7	6,750	5,533	4,439	7,411,820	227,565	TOTAL

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EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Fresh Water	250	N/A	250	N/A
Fresh Water	260	N/A	260	N/A
Shale and Siltstone	0	297	0	297
Siltstone with Trace Coal	est. 297	357	est. 297	357
Siltstone and Sandstone	est. 357	497	est. 357	497
Shale with Trace Coal	est. 497	517	est. 497	517
Shale and Siltstone	est. 517	977	est. 517	977
Sandstone	est. 977	1,017	est. 977	1,017
Shale	est. 1017	1,057	est. 1017	1,057
Sandstone	est. 1057	1,217	est. 1057	1,217
Shale with Coal	est. 1217	1,257	est. 1217	1,257
Sandstone/Siltstone/Shale	est. 1257	1,948	est. 1257	1,948
Big Lime	1,948	2,088	1,948	2,088
Big Injun	2,088	2,864	2,088	2,864
Fifty Foot Sandstone	2,864	2,960	2,864	2,960
Gordon	2,960	3,120	2,960	3,120
Bayard	3,120	3,592	3,120	3,592
Warren	3,592	4,162	3,592	4,162
Baltown	4,162	4,572	4,162	4,572
Bradford	4,572	4,971	4,572	4,971
Benson	4,971	5,197	4,971	5,197
Alexander	5,197	5,533	5,197	5,533
Elk	5,533	5,776	5,533	5,776
Rhinestreet	5,776	6,116	5,776	6,137
Sycamore	6,116	6,209	6,137	6,258
Middlesex	6,209	6,314	6,258	6,445
Burkett	6,314	6,337	6,445	6,510
Tully	6,337	6,353	6,510	6,574
Marcellus	6,353	NA	6,574	NA

*Please note Antero determines shallow formation tops based on mud logs that are only run on one well on a multi-well pad. The measured depth (MD) data on subsequent wells may be slightly different due to the well's unique departure.

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Antero
Bow Unit 1H
Ritchie County WV
Northing: 14271061.20
Easting: 1650650.20
As Drilled

WELL DETAILS: Bow Unit 1H

+N/-S	+E/-W	Northing	Ground Level	1118.0	Easting	Latitude	Longitude	Slot
0.0	0.0	14271061.20	1650650.2039° 17' 58.942 N80° 57' 49.774 W					

REFERENCE INFORMATION
Co-ordinate (NE) Reference: Well Bow Unit 1H, Grid North
Vertical (TVS) Reference: Pattern 325 (L, 1118' + K3 24' @ 1142 Oust
Section (VS) Reference: 305 + (0.04, 0.05)
Measured Depth Reference: Pattern 325 (L, 1118' + K3 24' @ 1142 Oust
Calculation Method: Minimum Curvature



Genie Lightfoot
9:46, December 16 2014

Scientific Drilling
11220 N.W. 10th Street
Yukon, OK 73099

PROJECT DETAILS: Ritchie County WV

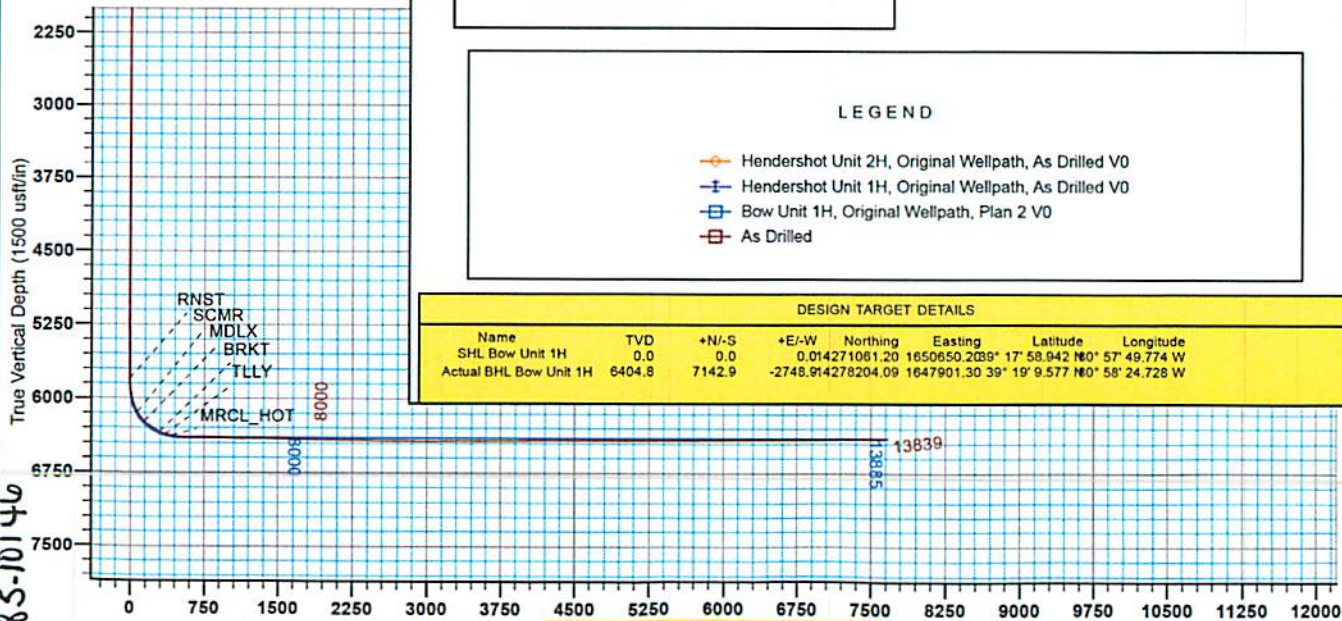
Geodetic System: Universal Transverse Mercator (US Survey Feet)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: Zone 17N (64 W to 78 W)
System Datum: Mean Sea Level

LEGEND

- Hendershot Unit 2H, Original Wellpath, As Drilled V0
- Hendershot Unit 1H, Original Wellpath, As Drilled V0
- Bow Unit 1H, Original Wellpath, Plan 2 V0
- As Drilled

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL Bow Unit 1H	0.0	0.0	0.0	0.014271061,20	1650650.2039° 17' 58.942 N80° 57' 49.774 W		
Actual BHL Bow Unit 1H	6404.8	7142.9	-2748.914278204,09	1647901.30 39° 19' 9.577 N80° 58' 24.728 W			



To convert Magnetic North to Grid, Subtract 8.38°
To convert True North to Grid, Subtract 0.02°

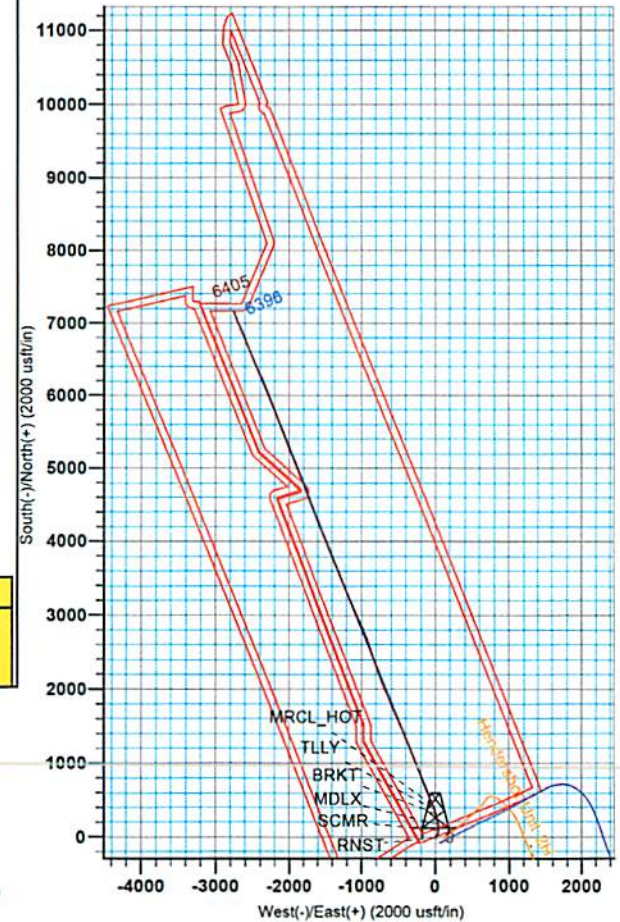
Azimuths to Grid North
True North: -0.02°
Magnetic North: -8.38°

Magnetic Field
Strength: 52244.9nT
Dip Angle: 66.88°
Date: 10/9/2014
Model: BGGM2014

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Antero

Ritchie County WV

Charlene Pad: Hendershot/Paige/Eppard/Brook/Bow

Bow Unit 1H

Original Wellpath

Design: As Drilled

EOW Completion Report

16 December, 2014

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Scientific Drilling

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Company:	Antero	Local Co-ordinate Reference:	Well Bow Unit 1H
Project:	Ritchie County WV	TVD Reference:	Patterson 325: GL 1118' + KB 24' @ 1142.0usft
Site:	Charlene Pad: Hendershot/Paige/Eppard/Brook/E	MD Reference:	Patterson 325: GL 1118' + KB 24' @ 1142.0usft
Well:	Bow Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

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

Site	Charlene Pad: Hendershot/Paige/Eppard/Brook/Bow, SHL Hendershot Unit 1H				
Site Position:		Northing:	14,270,988.12usft	Latitude:	39° 17' 58.219 N
From:	Map	Easting:	1,650,704.41 usft	Longitude:	80° 57' 49.084 W
Position Uncertainty:	2.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.02 °

Well	Bow Unit 1H, Marcellus					
Well Position	+N/-S	0.0 usft	Northing:	14,271,061.20 usft	Latitude:	39° 17' 58.942 N
	+E/-W	0.0 usft	Easting:	1,650,650.20 usft	Longitude:	80° 57' 49.774 W
Position Uncertainty		2.0 usft	Wellhead Elevation:	1,142.0 usft	Ground Level:	1,118.0usft

Wellbore	Original Wellpath				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	EGGM2014	10/9/2014	-8.36	66.88	52,245

Design	As Drilled				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:		Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
		0.0	0.0	0.0	337.95

Survey Program	Date	12/16/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
36.0	5,736.0	Survey #4 Final Gyro (Original Wellpath)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4	
5,750.0	13,839.0	Survey #5 SDI MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1	

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
36.0	0.07	79.48	36.0	0.0	0.0	0.0	0.19
61.0	0.14	79.48	61.0	0.0	0.1	0.0	0.28
86.0	0.22	79.48	86.0	0.0	0.1	0.0	0.32
111.0	0.29	79.48	111.0	0.0	0.3	0.1	0.28
136.0	0.35	118.24	136.0	0.0	0.4	0.1	0.88
161.0	0.24	90.94	161.0	0.0	0.5	-0.2	0.70
186.0	0.32	127.26	186.0	-0.1	0.6	-0.3	0.76
211.0	0.24	102.00	211.0	-0.1	0.7	-0.4	0.58
236.0	0.20	99.14	236.0	-0.1	0.8	-0.4	0.17
261.0	0.28	109.48	261.0	-0.2	0.9	-0.5	0.36

Company:	Antero	Local Co-ordinate Reference:	Well Bow Unit 1H
Project:	Ritchie County WV	TVD Reference:	Patterson 325: GL 1118' + KB 24' @ 1142.0usft
Site:	Charlene Pad: Hendershot/Paige/Eppard/Brook/E	MD Reference:	Patterson 325: GL 1118' + KB 24' @ 1142.0usft
Well:	Bow Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	
286.0	0.31	122.23	286.0	-0.2	1.0	-0.6	0.29	
311.0	0.24	122.66	311.0	-0.3	1.1	-0.7	0.28	
336.0	0.32	132.13	336.0	-0.4	1.2	-0.8	0.37	
361.0	0.26	128.79	361.0	-0.4	1.3	-0.9	0.25	
386.0	0.27	127.83	386.0	-0.5	1.4	-1.0	0.04	
411.0	0.25	116.59	411.0	-0.6	1.5	-1.1	0.22	
436.0	0.25	114.28	436.0	-0.6	1.6	-1.2	0.04	
461.0	0.16	103.44	461.0	-0.6	1.7	-1.2	0.39	
486.0	0.15	118.52	486.0	-0.7	1.8	-1.3	0.17	
511.0	0.20	127.61	511.0	-0.7	1.8	-1.3	0.23	
536.0	0.18	124.00	536.0	-0.8	1.9	-1.4	0.09	
561.0	0.20	131.53	561.0	-0.8	1.9	-1.5	0.13	
586.0	0.24	132.90	586.0	-0.9	2.0	-1.6	0.16	
611.0	0.24	118.84	611.0	-0.9	2.1	-1.7	0.23	
636.0	0.22	130.18	636.0	-1.0	2.2	-1.7	0.20	
661.0	0.26	137.54	661.0	-1.1	2.3	-1.8	0.20	
686.0	0.25	135.98	686.0	-1.1	2.3	-1.9	0.05	
711.0	0.20	155.29	711.0	-1.2	2.4	-2.0	0.36	
736.0	0.20	152.04	736.0	-1.3	2.4	-2.1	0.05	
761.0	0.29	141.17	761.0	-1.4	2.5	-2.2	0.40	
786.0	0.25	128.31	786.0	-1.5	2.6	-2.3	0.29	
811.0	0.31	152.03	811.0	-1.6	2.6	-2.4	0.52	
836.0	0.28	149.76	836.0	-1.7	2.7	-2.6	0.13	
861.0	0.25	149.36	861.0	-1.8	2.8	-2.7	0.12	
886.0	0.24	151.61	886.0	-1.9	2.8	-2.8	0.06	
911.0	0.26	155.64	911.0	-2.0	2.9	-2.9	0.11	
936.0	0.31	156.15	936.0	-2.1	2.9	-3.0	0.20	
961.0	0.22	146.75	961.0	-2.2	3.0	-3.1	0.40	
986.0	0.18	157.95	986.0	-2.3	3.0	-3.2	0.22	
1,011.0	0.21	168.06	1,011.0	-2.3	3.0	-3.3	0.18	
1,036.0	0.29	157.75	1,036.0	-2.4	3.1	-3.4	0.37	
1,061.0	0.23	153.87	1,061.0	-2.5	3.1	-3.5	0.25	
1,086.0	0.16	164.37	1,086.0	-2.6	3.2	-3.6	0.31	
1,111.0	0.21	149.82	1,111.0	-2.7	3.2	-3.7	0.27	
1,136.0	0.21	152.68	1,136.0	-2.8	3.2	-3.8	0.04	
1,161.0	0.26	155.75	1,161.0	-2.9	3.3	-3.9	0.21	
1,186.0	0.18	160.04	1,186.0	-3.0	3.3	-4.0	0.33	
1,211.0	0.17	141.34	1,211.0	-3.0	3.3	-4.1	0.23	
1,236.0	0.18	135.55	1,236.0	-3.1	3.4	-4.1	0.08	
1,261.0	0.21	130.18	1,261.0	-3.1	3.5	-4.2	0.14	
1,286.0	0.22	143.53	1,286.0	-3.2	3.5	-4.3	0.20	
1,311.0	0.24	141.24	1,311.0	-3.3	3.6	-4.4	0.09	
1,336.0	0.21	142.28	1,336.0	-3.4	3.6	-4.5	0.12	
1,361.0	0.25	137.55	1,361.0	-3.4	3.7	-4.6	0.18	

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EOW Completion Report



Company:	Antero	Local Co-ordinate Reference:	Well Bow Unit 1H
Project:	Ritchie County WV	TVD Reference:	Patterson 325: GL 1118' + KB 24' @ 1142.0usft
Site:	Charlene Pad: Hendershot/Paige/Eppard/Brook/E	MD Reference:	Patterson 325: GL 1118' + KB 24' @ 1142.0usft
Well:	Bow Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Survey									
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)		
1,386.0	0.19	145.81	1,386.0	-3.5	3.8	-4.7	0.27		
1,411.0	0.25	145.26	1,411.0	-3.6	3.8	-4.8	0.24		
1,436.0	0.22	130.17	1,436.0	-3.7	3.9	-4.9	0.27		
1,461.0	0.22	124.46	1,461.0	-3.7	4.0	-4.9	0.09		
1,486.0	0.34	143.93	1,486.0	-3.8	4.0	-5.1	0.61		
1,511.0	0.24	142.66	1,511.0	-3.9	4.1	-5.2	0.40		
1,536.0	0.24	137.56	1,536.0	-4.0	4.2	-5.3	0.09		
1,561.0	0.33	158.53	1,561.0	-4.1	4.3	-5.4	0.55		
1,586.0	0.20	140.74	1,586.0	-4.2	4.3	-5.5	0.61		
1,611.0	0.20	162.75	1,611.0	-4.3	4.3	-5.6	0.31		
1,636.0	0.28	162.82	1,636.0	-4.4	4.4	-5.7	0.32		
1,661.0	0.18	173.52	1,661.0	-4.5	4.4	-5.8	0.43		
1,686.0	0.18	176.23	1,686.0	-4.6	4.4	-5.9	0.03		
1,711.0	0.16	170.73	1,711.0	-4.6	4.4	-6.0	0.10		
1,736.0	0.17	180.62	1,736.0	-4.7	4.4	-6.0	0.12		
1,761.0	0.14	161.20	1,761.0	-4.8	4.4	-6.1	0.24		
1,786.0	0.24	171.10	1,786.0	-4.9	4.4	-6.2	0.42		
1,811.0	0.18	161.89	1,811.0	-4.9	4.5	-6.3	0.27		
1,836.0	0.12	167.21	1,836.0	-5.0	4.5	-6.3	0.25		
1,861.0	0.15	186.47	1,861.0	-5.1	4.5	-6.4	0.22		
1,886.0	0.18	170.54	1,886.0	-5.1	4.5	-6.4	0.22		
1,911.0	0.13	159.60	1,911.0	-5.2	4.5	-6.5	0.23		
1,936.0	0.16	165.27	1,936.0	-5.3	4.5	-6.6	0.13		
1,961.0	0.14	165.79	1,961.0	-5.3	4.5	-6.6	0.08		
1,986.0	0.07	162.26	1,986.0	-5.4	4.6	-6.7	0.28		
2,011.0	0.16	146.54	2,011.0	-5.4	4.6	-6.7	0.38		
2,036.0	0.12	126.26	2,036.0	-5.5	4.6	-6.8	0.25		
2,061.0	0.17	137.87	2,061.0	-5.5	4.7	-6.8	0.23		
2,086.0	0.09	135.47	2,086.0	-5.5	4.7	-6.9	0.32		
2,111.0	0.13	144.52	2,111.0	-5.6	4.7	-6.9	0.17		
2,136.0	0.17	124.27	2,136.0	-5.6	4.8	-7.0	0.26		
2,161.0	0.19	117.96	2,161.0	-5.7	4.8	-7.1	0.11		
2,186.0	0.20	123.13	2,186.0	-5.7	4.9	-7.1	0.08		
2,211.0	0.19	155.00	2,211.0	-5.8	5.0	-7.2	0.43		
2,236.0	0.27	151.99	2,236.0	-5.9	5.0	-7.3	0.32		
2,261.0	0.16	155.49	2,261.0	-5.9	5.1	-7.4	0.44		
2,286.0	0.15	126.70	2,286.0	-6.0	5.1	-7.5	0.31		
2,311.0	0.21	162.67	2,311.0	-6.1	5.1	-7.5	0.50		
2,336.0	0.23	146.16	2,336.0	-6.1	5.2	-7.6	0.26		
2,361.0	0.22	163.66	2,361.0	-6.2	5.2	-7.6	0.28		
2,386.0	0.24	147.64	2,386.0	-6.3	5.3	-7.8	0.27		
2,411.0	0.07	107.19	2,411.0	-6.4	5.3	-7.9	0.77		
2,436.0	0.09	113.33	2,436.0	-6.4	5.3	-7.9	0.09		
2,461.0	0.05	113.93	2,461.0	-6.4	5.4	-7.9	0.16		
2,486.0	0.03	86.47	2,486.0	-6.4	5.4	-7.9	0.11		

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Company: Antero	Local Co-ordinate Reference: Well Bow Unit 1H
Project: Ritchie County WV	TVD Reference: Patterson 325: GL 1118' + KB 24' @ 1142.0usft
Site: Charlene Pad: Hendershot/Paige/Eppard/Brook/E	MD Reference: Patterson 325: GL 1118' + KB 24' @ 1142.0usft
Well: Bow Unit 1H	North Reference: Grid
Wellbore: Original Wellpath	Survey Calculation Method: Minimum Curvature
Design: As Drilled	Database: Oklahoma District

Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	
2,511.0	0.09	106.58	2,511.0	-6.4	5.4	-8.0	0.25	
2,536.0	0.08	103.68	2,536.0	-6.4	5.5	-8.0	0.04	
2,561.0	0.01	74.59	2,561.0	-6.4	5.5	-8.0	0.29	
2,586.0	0.06	135.32	2,586.0	-6.4	5.5	-8.0	0.22	
2,611.0	0.07	140.96	2,611.0	-6.4	5.5	-8.0	0.05	
2,636.0	0.07	116.87	2,636.0	-6.5	5.5	-8.1	0.12	
2,661.0	0.04	220.07	2,661.0	-6.5	5.5	-8.1	0.35	
2,686.0	0.07	148.99	2,686.0	-6.5	5.5	-8.1	0.27	
2,711.0	0.02	167.13	2,711.0	-6.5	5.5	-8.1	0.21	
2,736.0	0.01	270.41	2,736.0	-6.5	5.5	-8.1	0.10	
2,761.0	0.04	117.91	2,761.0	-6.5	5.5	-8.1	0.20	
2,786.0	0.03	141.94	2,786.0	-6.5	5.6	-8.1	0.07	
2,811.0	0.06	258.77	2,811.0	-6.5	5.5	-8.1	0.31	
2,836.0	0.07	316.69	2,836.0	-6.5	5.5	-8.1	0.25	
2,861.0	0.09	301.19	2,861.0	-6.5	5.5	-8.1	0.12	
2,886.0	0.03	155.65	2,886.0	-6.5	5.5	-8.1	0.46	
2,911.0	0.03	37.28	2,911.0	-6.5	5.5	-8.1	0.21	
2,936.0	0.03	236.05	2,936.0	-6.5	5.5	-8.1	0.24	
2,961.0	0.03	307.58	2,961.0	-6.5	5.5	-8.1	0.14	
2,986.0	0.05	59.84	2,986.0	-6.5	5.5	-8.1	0.27	
3,011.0	0.07	143.81	3,011.0	-6.5	5.5	-8.1	0.33	
3,036.0	0.05	251.09	3,036.0	-6.5	5.5	-8.1	0.39	
3,061.0	0.13	115.72	3,061.0	-6.5	5.5	-8.1	0.68	
3,086.0	0.06	112.82	3,086.0	-6.5	5.6	-8.2	0.28	
3,111.0	0.07	52.17	3,111.0	-6.5	5.6	-8.2	0.26	
3,136.0	0.04	66.06	3,136.0	-6.5	5.6	-8.2	0.13	
3,161.0	0.04	63.13	3,161.0	-6.5	5.6	-8.2	0.01	
3,186.0	0.03	100.99	3,186.0	-6.5	5.6	-8.2	0.10	
3,211.0	0.10	94.79	3,211.0	-6.5	5.7	-8.2	0.28	
3,236.0	0.05	113.95	3,236.0	-6.5	5.7	-8.2	0.22	
3,261.0	0.09	102.85	3,261.0	-6.5	5.7	-8.2	0.17	
3,286.0	0.10	99.19	3,286.0	-6.5	5.8	-8.2	0.05	
3,311.0	0.09	125.33	3,311.0	-6.6	5.8	-8.3	0.18	
3,336.0	0.09	116.15	3,336.0	-6.6	5.8	-8.3	0.06	
3,361.0	0.09	108.31	3,361.0	-6.6	5.9	-8.3	0.05	
3,386.0	0.08	113.84	3,386.0	-6.6	5.9	-8.3	0.05	
3,411.0	0.08	152.41	3,411.0	-6.6	5.9	-8.4	0.21	
3,436.0	0.14	112.64	3,436.0	-6.7	6.0	-8.4	0.37	
3,461.0	0.09	113.77	3,461.0	-6.7	6.0	-8.4	0.20	
3,486.0	0.08	142.67	3,486.0	-6.7	6.0	-8.5	0.17	
3,511.0	0.14	141.22	3,511.0	-6.7	6.1	-8.5	0.24	
3,536.0	0.14	115.46	3,536.0	-6.8	6.1	-8.6	0.25	
3,561.0	0.12	122.42	3,561.0	-6.8	6.2	-8.6	0.10	
3,586.0	0.10	132.48	3,586.0	-6.8	6.2	-8.7	0.11	

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Company:	Antero	Local Co-ordinate Reference:	Well Bow Unit 1H
Project:	Ritchie County WV	TVD Reference:	Patterson 325: GL 1118' + KB 24' @ 1142.0usft
Site:	Charlene Pad: Hendershot/Paige/Eppard/Brook/E	MD Reference:	Patterson 325: GL 1118' + KB 24' @ 1142.0usft
Well:	Bow Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Survey									
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	EW (usft)	V. Sec (usft)	DLeg (°/100usft)		
3,611.0	0.09	145.48	3,611.0	-6.9	6.2	-8.7	0.09		
3,636.0	0.21	145.78	3,636.0	-6.9	6.3	-8.8	0.48		
3,661.0	0.09	128.92	3,661.0	-7.0	6.3	-8.8	0.51		
3,686.0	0.15	141.35	3,686.0	-7.0	6.3	-8.9	0.26		
3,711.0	0.13	146.99	3,711.0	-7.1	6.4	-8.9	0.10		
3,736.0	0.21	136.32	3,736.0	-7.1	6.4	-9.0	0.34		
3,761.0	0.15	130.08	3,761.0	-7.2	6.5	-9.1	0.25		
3,786.0	0.20	140.71	3,786.0	-7.2	6.5	-9.1	0.24		
3,811.0	0.13	136.03	3,811.0	-7.3	6.6	-9.2	0.28		
3,836.0	0.16	132.91	3,836.0	-7.3	6.6	-9.3	0.12		
3,861.0	0.09	171.78	3,861.0	-7.4	6.7	-9.3	0.42		
3,886.0	0.19	135.81	3,886.0	-7.4	6.7	-9.4	0.51		
3,911.0	0.12	157.86	3,911.0	-7.5	6.7	-9.4	0.36		
3,936.0	0.16	169.91	3,936.0	-7.5	6.7	-9.5	0.20		
3,961.0	0.09	222.37	3,961.0	-7.6	6.7	-9.5	0.51		
3,986.0	0.22	247.79	3,986.0	-7.6	6.7	-9.6	0.58		
4,011.0	0.20	159.47	4,011.0	-7.7	6.6	-9.6	1.17		
4,036.0	0.15	139.62	4,036.0	-7.7	6.7	-9.7	0.31		
4,061.0	0.10	113.24	4,061.0	-7.8	6.7	-9.7	0.30		
4,086.0	0.18	147.04	4,086.0	-7.8	6.8	-9.8	0.45		
4,111.0	0.12	184.66	4,111.0	-7.9	6.8	-9.8	0.45		
4,136.0	0.21	190.68	4,136.0	-7.9	6.8	-9.9	0.37		
4,161.0	0.26	193.64	4,161.0	-8.0	6.8	-10.0	0.21		
4,186.0	0.20	212.73	4,186.0	-8.1	6.7	-10.1	0.39		
4,211.0	0.30	213.21	4,211.0	-8.2	6.7	-10.1	0.40		
4,236.0	0.31	206.61	4,236.0	-8.3	6.6	-10.2	0.15		
4,261.0	0.34	206.93	4,261.0	-8.5	6.5	-10.3	0.12		
4,286.0	0.46	214.10	4,286.0	-8.6	6.4	-10.4	0.52		
4,311.0	0.31	215.44	4,311.0	-8.7	6.3	-10.5	0.60		
4,336.0	0.37	209.72	4,336.0	-8.9	6.3	-10.6	0.28		
4,361.0	0.35	212.23	4,361.0	-9.0	6.2	-10.7	0.10		
4,386.0	0.38	219.31	4,386.0	-9.1	6.1	-10.8	0.22		
4,411.0	0.33	219.96	4,411.0	-9.3	6.0	-10.8	0.20		
4,436.0	0.39	217.40	4,436.0	-9.4	5.9	-10.9	0.25		
4,461.0	0.31	228.06	4,461.0	-9.5	5.8	-11.0	0.41		
4,486.0	0.39	212.42	4,486.0	-9.6	5.7	-11.0	0.50		
4,511.0	0.37	216.17	4,511.0	-9.7	5.6	-11.1	0.13		
4,536.0	0.37	212.06	4,536.0	-9.9	5.5	-11.3	0.11		
4,561.0	0.34	222.33	4,561.0	-10.0	5.4	-11.4	0.28		
4,586.0	0.32	221.33	4,586.0	-10.1	5.3	-11.4	0.08		
4,611.0	0.34	221.58	4,611.0	-10.2	5.2	-11.4	0.08		
4,636.0	0.39	221.08	4,636.0	-10.3	5.1	-11.5	0.20		
4,661.0	0.30	232.63	4,661.0	-10.4	5.0	-11.6	0.45		
4,686.0	0.43	225.45	4,686.0	-10.5	4.9	-11.6	0.55		

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Project:	Ritchie County WV	TVD Reference:	Patterson 325: GL 1118' + KB 24' @ 1142.0usft
Site:	Charlene Pad: Hendershot/Paige/Eppard/Brook/E	MD Reference:	Patterson 325: GL 1118' + KB 24' @ 1142.0usft
Well:	Bow Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Survey									
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)		
4,711.0	0.33	229.25	4,711.0	-10.7	4.8	-11.7	0.41		
4,736.0	0.34	229.10	4,736.0	-10.8	4.7	-11.7	0.04		
4,761.0	0.37	223.18	4,761.0	-10.9	4.5	-11.8	0.19		
4,786.0	0.36	234.84	4,786.0	-11.0	4.4	-11.8	0.30		
4,811.0	0.33	238.59	4,811.0	-11.0	4.3	-11.9	0.15		
4,836.0	0.30	236.93	4,836.0	-11.1	4.2	-11.9	0.13		
4,861.0	0.27	222.42	4,861.0	-11.2	4.1	-11.9	0.31		
4,886.0	0.27	242.52	4,886.0	-11.3	4.0	-11.9	0.38		
4,911.0	0.34	235.23	4,911.0	-11.3	3.9	-12.0	0.32		
4,936.0	0.27	242.18	4,936.0	-11.4	3.8	-12.0	0.32		
4,961.0	0.28	250.42	4,961.0	-11.5	3.7	-12.0	0.16		
4,986.0	0.30	237.24	4,986.0	-11.5	3.6	-12.0	0.28		
5,011.0	0.24	258.41	5,011.0	-11.6	3.4	-12.0	0.46		
5,036.0	0.23	266.65	5,036.0	-11.6	3.3	-12.0	0.14		
5,061.0	0.23	258.65	5,061.0	-11.6	3.2	-12.0	0.13		
5,086.0	0.18	264.70	5,086.0	-11.6	3.2	-11.9	0.22		
5,111.0	0.28	270.04	5,111.0	-11.6	3.1	-11.9	0.41		
5,136.0	0.23	264.46	5,136.0	-11.6	2.9	-11.9	0.22		
5,161.0	0.20	292.90	5,161.0	-11.6	2.9	-11.8	0.44		
5,186.0	0.30	260.20	5,186.0	-11.6	2.8	-11.8	0.68		
5,211.0	0.23	260.56	5,211.0	-11.6	2.6	-11.7	0.28		
5,236.0	0.28	264.75	5,236.0	-11.6	2.5	-11.7	0.21		
5,261.0	0.28	273.62	5,261.0	-11.6	2.4	-11.7	0.17		
5,286.0	0.29	270.98	5,286.0	-11.6	2.3	-11.6	0.07		
5,311.0	0.28	279.79	5,311.0	-11.6	2.2	-11.6	0.18		
5,336.0	0.27	288.15	5,336.0	-11.6	2.0	-11.5	0.17		
5,361.0	0.29	269.39	5,361.0	-11.6	1.9	-11.4	0.37		
5,386.0	0.33	267.56	5,386.0	-11.6	1.8	-11.4	0.16		
5,411.0	0.26	271.29	5,411.0	-11.6	1.7	-11.3	0.29		
5,436.0	0.27	285.66	5,436.0	-11.5	1.5	-11.3	0.27		
5,461.0	0.35	280.88	5,461.0	-11.5	1.4	-11.2	0.34		
5,486.0	0.29	284.97	5,486.0	-11.5	1.3	-11.1	0.26		
5,511.0	0.40	283.05	5,511.0	-11.5	1.1	-11.0	0.44		
5,536.0	0.39	287.21	5,536.0	-11.4	1.0	-10.9	0.12		
5,561.0	0.32	281.12	5,561.0	-11.4	0.8	-10.8	0.32		
5,586.0	0.41	281.78	5,586.0	-11.3	0.7	-10.8	0.36		
5,611.0	0.44	277.55	5,611.0	-11.3	0.5	-10.7	0.17		
5,636.0	0.38	289.24	5,636.0	-11.3	0.3	-10.6	0.41		
5,661.0	0.44	272.54	5,661.0	-11.2	0.1	-10.5	0.53		
5,686.0	0.43	279.61	5,686.0	-11.2	-0.1	-10.4	0.22		
5,711.0	0.50	260.40	5,711.0	-11.2	-0.3	-10.3	0.68		
5,736.0	0.56	284.24	5,736.0	-11.2	-0.5	-10.2	0.91		
5,750.0	0.57	273.21	5,750.0	-11.2	-0.6	-10.1	0.78		
5,782.0	0.87	351.10	5,782.0	-10.9	-0.8	-9.8	2.92		

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EOW Completion Report



Company:	Antero	Local Co-ordinate Reference:	Well Bow Unit 1H
Project:	Ritchie County WV	TVD Reference:	Patterson 325: GL 1118' + KB 24' @ 1142.0usft
Site:	Charlene Pad: Hendershot/Paige/Eppard/Brook/E	MD Reference:	Patterson 325: GL 1118' + KB 24' @ 1142.0usft
Well:	Bow Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Survey							
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
5,800.0	2.73	24.63	5,799.9	-10.4	-0.7	-9.4	11.48
RNST							
5,813.0	4.20	29.38	5,812.9	-9.7	-0.3	-8.9	11.48
5,845.0	7.48	31.94	5,844.7	-6.9	1.4	-6.9	10.28
5,876.0	11.32	30.77	5,875.3	-2.6	4.0	-3.9	12.40
5,907.0	13.96	32.78	5,905.6	3.2	7.6	0.1	8.63
5,939.0	16.37	35.62	5,936.5	10.1	12.3	4.7	7.88
5,970.0	18.15	32.22	5,966.1	17.7	17.4	9.9	6.60
6,002.0	19.46	27.97	5,996.4	26.6	22.6	16.2	5.92
6,033.0	21.70	24.73	6,025.4	36.4	27.4	23.5	8.10
6,065.0	24.27	20.55	6,054.8	47.9	32.2	32.3	9.51
6,096.0	26.68	14.06	6,082.8	60.7	36.1	42.7	11.89
6,128.0	29.37	9.04	6,111.1	75.4	39.1	55.2	11.17
6,159.0	32.52	5.21	6,137.7	91.2	41.0	69.1	11.98
6,161.0	32.73	5.04	6,139.3	92.3	41.1	70.1	11.70
SCMR							
6,190.0	35.87	2.74	6,163.3	108.6	42.2	84.8	11.70
6,221.0	39.04	359.06	6,187.9	127.4	42.5	102.1	12.51
6,253.0	42.79	356.50	6,212.1	148.3	41.7	121.8	12.83
6,282.0	46.30	353.51	6,232.8	168.6	39.9	141.3	14.08
MDLX							
6,284.0	46.54	353.32	6,234.1	170.0	39.7	142.7	14.08
6,316.0	50.35	351.55	6,255.4	193.8	36.6	165.9	12.60
6,347.0	54.71	348.74	6,274.2	218.0	32.3	189.9	15.80
6,379.0	56.38	346.99	6,292.3	243.8	26.8	215.9	6.90
6,410.0	57.49	346.08	6,309.2	269.1	20.7	241.6	4.34
6,442.0	61.61	343.13	6,325.4	295.6	13.4	269.0	15.13
6,469.0	65.22	341.31	6,337.5	318.6	6.0	293.1	14.68
BRKT							
6,473.0	65.76	341.05	6,339.2	322.1	4.9	296.7	14.68
6,505.0	68.90	339.70	6,351.5	349.9	-5.1	326.2	10.56
6,534.0	72.34	337.79	6,361.1	375.4	-15.0	353.5	13.40
TLLY							
6,536.0	72.58	337.66	6,361.7	377.1	-15.7	355.4	13.40
6,567.0	75.88	337.46	6,370.2	404.7	-27.1	385.3	10.66
6,598.0	79.27	336.68	6,376.8	432.6	-38.9	415.5	11.21
MRCL_HOT							
6,599.0	79.38	336.65	6,377.0	433.5	-39.3	416.5	11.21
6,630.0	80.98	336.79	6,382.3	461.5	-51.4	447.1	5.18
6,662.0	83.87	337.31	6,386.5	490.7	-63.7	478.8	9.17
6,693.0	86.08	337.99	6,389.2	519.3	-75.5	509.6	7.46
6,728.0	89.34	338.08	6,390.6	551.7	-88.5	544.6	9.32
6,759.0	89.60	337.82	6,390.9	580.5	-100.2	575.6	1.19
6,853.0	91.28	337.91	6,390.2	667.5	-135.6	669.6	1.79
6,948.0	88.29	339.75	6,390.6	756.1	-169.9	764.6	3.70

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EOW Completion Report



Company:	Antero	Local Co-ordinate Reference:	Well Bow Unit 1H
Project:	Ritchie County WV	TVD Reference:	Patterson 325: GL 1118' + KB 24' @ 1142.0usft
Site:	Charlene Pad: Hendershot/Paige/Eppard/Brook/E	MD Reference:	Patterson 325: GL 1118' + KB 24' @ 1142.0usft
Well:	Bow Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
7,042.0	88.46	339.40	6,393.2	844.2	-202.7	858.5	0.41
7,137.0	87.05	338.96	6,396.9	932.9	-236.4	953.4	1.55
7,230.0	86.79	338.17	6,401.9	1,019.3	-270.4	1,046.3	0.89
7,325.0	90.13	338.17	6,404.5	1,107.5	-305.7	1,141.2	3.52
7,419.0	91.36	337.91	6,403.3	1,194.6	-340.8	1,235.2	1.34
7,513.0	89.16	337.56	6,402.8	1,281.6	-376.4	1,329.2	2.37
7,608.0	89.08	337.12	6,404.3	1,369.3	-413.0	1,424.2	0.47
7,702.0	89.43	336.59	6,405.5	1,455.7	-450.0	1,518.2	0.68
7,796.0	88.02	336.41	6,407.6	1,541.9	-487.4	1,612.1	1.51
7,890.0	87.41	336.41	6,411.4	1,628.0	-525.0	1,706.0	0.65
7,984.0	88.90	335.97	6,414.4	1,713.9	-563.0	1,799.9	1.65
8,078.0	89.52	339.84	6,415.7	1,801.0	-598.3	1,893.9	4.17
8,173.0	89.52	337.91	6,416.5	1,889.6	-632.5	1,988.9	2.03
8,267.0	89.69	336.68	6,417.1	1,976.3	-668.8	2,082.8	1.32
8,361.0	89.16	336.77	6,418.1	2,062.7	-706.0	2,176.8	0.57
8,455.0	89.78	339.14	6,418.9	2,149.8	-741.2	2,270.8	2.61
8,549.0	88.81	338.79	6,420.1	2,237.5	-775.0	2,364.8	1.10
8,643.0	88.37	341.95	6,422.4	2,326.0	-806.5	2,458.7	3.39
8,738.0	88.37	342.21	6,425.1	2,416.4	-835.8	2,553.4	0.27
8,832.0	89.43	341.78	6,426.9	2,505.7	-864.8	2,647.1	1.22
8,926.0	90.31	342.04	6,427.1	2,595.1	-894.0	2,740.9	0.98
9,020.0	89.43	337.64	6,427.4	2,683.3	-926.4	2,834.8	4.77
9,114.0	89.78	338.17	6,428.0	2,770.4	-961.7	2,928.8	0.68
9,208.0	89.43	335.97	6,428.6	2,857.0	-998.4	3,022.8	2.37
9,303.0	90.40	335.36	6,428.8	2,943.5	-1,037.5	3,117.7	1.21
9,396.0	90.75	335.62	6,427.9	3,028.1	-1,076.1	3,210.6	0.47
9,491.0	91.10	337.20	6,426.3	3,115.2	-1,114.1	3,305.6	1.70
9,585.0	90.75	338.26	6,424.8	3,202.2	-1,149.7	3,399.6	1.19
9,679.0	88.99	336.41	6,425.0	3,288.9	-1,185.9	3,493.5	2.72
9,773.0	90.22	335.97	6,425.7	3,374.9	-1,223.9	3,587.5	1.39
9,867.0	90.75	337.64	6,424.9	3,461.3	-1,260.9	3,681.5	1.86
9,962.0	90.92	336.85	6,423.5	3,548.9	-1,297.6	3,776.5	0.85
10,052.0	90.66	336.41	6,422.2	3,631.5	-1,333.3	3,866.4	0.57
10,143.0	90.40	335.53	6,421.4	3,714.6	-1,370.4	3,957.4	1.01
10,233.0	91.45	337.56	6,420.0	3,797.1	-1,406.2	4,047.3	2.54
10,324.0	90.22	338.26	6,418.6	3,881.4	-1,440.4	4,138.3	1.56
10,415.0	90.22	338.26	6,418.3	3,966.0	-1,474.1	4,229.3	0.00
10,505.0	90.57	338.44	6,417.7	4,049.6	-1,507.3	4,319.3	0.44
10,596.0	89.52	337.73	6,417.6	4,134.0	-1,541.3	4,410.3	1.39
10,686.0	88.72	338.08	6,419.0	4,217.4	-1,575.2	4,500.3	0.97
10,776.0	89.87	337.73	6,420.1	4,300.8	-1,609.0	4,590.3	1.34
10,867.0	90.13	337.73	6,420.1	4,385.0	-1,643.5	4,681.3	0.29
10,958.0	90.22	337.03	6,419.8	4,469.0	-1,678.5	4,772.3	0.78
11,048.0	90.31	336.94	6,419.4	4,551.9	-1,713.7	4,862.3	0.14

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EOW Completion Report



Company: Antero	Local Co-ordinate Reference: Well Bow Unit 1H
Project: Ritchie County WV	TVD Reference: Patterson 325: GL 1118' + KB 24' @ 1142.0usft
Site: Charlene Pad: Hendershot/Paige/Eppard/Brook/E	MD Reference: Patterson 325: GL 1118' + KB 24' @ 1142.0usft
Well: Bow Unit 1H	North Reference: Grid
Wellbore: Original Wellpath	Survey Calculation Method: Minimum Curvature
Design: As Drilled	Database: Oklahoma District

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
11,142.0	90.57	338.35	6,418.7	4,638.8	-1,749.4	4,956.3	1.53
11,236.0	89.60	337.73	6,418.5	4,726.0	-1,784.6	5,050.3	1.22
11,330.0	90.31	339.67	6,418.6	4,813.5	-1,818.7	5,144.2	2.20
11,423.0	90.40	338.52	6,418.0	4,900.4	-1,851.9	5,237.2	1.24
11,517.0	89.78	337.03	6,417.9	4,987.4	-1,887.5	5,331.2	1.72
11,611.0	90.48	338.17	6,417.7	5,074.3	-1,923.3	5,425.2	1.42
11,704.0	90.22	337.20	6,417.1	5,160.4	-1,958.6	5,518.2	1.08
11,798.0	90.57	338.96	6,416.4	5,247.6	-1,993.7	5,612.2	1.91
11,892.0	90.22	337.82	6,415.8	5,335.0	-2,028.3	5,706.2	1.27
11,986.0	90.22	339.67	6,415.4	5,422.6	-2,062.4	5,800.2	1.97
12,080.0	89.96	339.40	6,415.3	5,510.6	-2,095.2	5,894.1	0.40
12,175.0	90.31	339.23	6,415.1	5,599.5	-2,128.8	5,989.1	0.41
12,270.0	90.84	339.75	6,414.1	5,688.5	-2,162.1	6,084.1	0.78
12,364.0	91.45	339.40	6,412.2	5,776.5	-2,194.9	6,178.0	0.75
12,458.0	89.52	339.31	6,411.4	5,864.5	-2,228.0	6,272.0	2.06
12,552.0	89.87	338.61	6,411.9	5,952.2	-2,261.8	6,366.0	0.83
12,646.0	90.56	339.23	6,411.6	6,039.9	-2,295.6	6,459.9	0.99
12,740.0	91.36	339.23	6,410.0	6,127.8	-2,328.9	6,553.9	0.85
12,834.0	89.69	336.06	6,409.1	6,214.7	-2,364.6	6,647.9	3.81
12,928.0	89.60	333.34	6,409.7	6,299.7	-2,404.8	6,741.7	2.90
13,022.0	89.78	336.94	6,410.2	6,385.0	-2,444.3	6,835.6	3.83
13,115.0	90.75	338.79	6,409.8	6,471.1	-2,479.4	6,928.6	2.25
13,209.0	91.19	338.70	6,408.2	6,558.7	-2,513.4	7,022.6	0.48
13,303.0	90.66	338.44	6,406.7	6,646.2	-2,547.8	7,116.6	0.63
13,398.0	90.75	337.38	6,405.5	6,734.2	-2,583.5	7,211.5	1.12
13,492.0	90.84	336.59	6,404.2	6,820.7	-2,620.2	7,305.5	0.85
13,586.0	89.52	336.59	6,403.9	6,907.0	-2,657.6	7,399.5	1.40
13,680.0	89.52	338.61	6,404.7	6,993.9	-2,693.4	7,493.5	2.15
13,774.0	90.13	339.93	6,405.0	7,081.8	-2,726.7	7,587.5	1.55
13,783.0	90.22	340.02	6,405.0	7,090.3	-2,729.8	7,596.4	1.41
13,839.0	90.22	340.02	6,404.8	7,142.9	-2,748.9	7,652.4	0.00

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,800.0	5,799.9	-10.4	-0.7	RNST
6,161.0	6,139.3	92.3	41.1	SCMR
6,282.0	6,232.8	168.6	39.9	MDLX
6,469.0	6,337.5	318.6	6.0	BRKT
6,534.0	6,361.1	375.4	-15.0	TLLY
6,598.0	6,376.8	432.6	-38.9	MRCL_HOT

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/17/2015
Job End Date:	5/8/2015
State:	West Virginia
County:	Ritchie
API Number:	47-085-10146-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Bow Unit 1H
Longitude:	-80.96365300
Latitude:	39.29978900
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,429
Total Base Water Volume (gal):	9,907,732
Total Base Non Water Volume:	401,200



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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	Antero Resources	Carrier/Base Fluid					
			Water	7732-18-5	100.00000	91.27414	
Sand	U.S. Well Services	Proppant					
			Crystalline Silica, quartz	14808-60-7	100.00000	8.18714	
HCL Acid (12.6%-18.0%)	U.S. Well Services	Bulk Acid					
			Water	7732-18-5	87.50000	0.18540	
			Hydrogen Chloride	7647-01-1	18.00000	0.04424	
LGC-15	U.S. Well Services	Gelling Agents					
			Hydrated light distillate (petroleum)	64742-47-8	65.00000	0.08706	
			Guar gum	9000-30-0	50.00000	0.08330	
			Nonylphenol ethoxylated	127087-87-0	5.00000	0.00874	
WFRA-405	U.S. Well Services	Friction Reducer					
			Water	7732-18-5	40.00000	0.03226	
			Anionic Polyacrylamide	Proprietary	40.00000	0.03226	
			Sodium Chloride	7647-14-5	20.00000	0.01613	
			Petroleum Distillates	64742-47-8	20.00000	0.01298	
			Ethoxylated alcohol blend	Proprietary	5.00000	0.00403	
SI-1100	U.S. Well Services	Scale Inhibitor					

85-10146

85-10146

			Water	7732-18-5	80.00000	0.01000
			Ethylene Glycol	107-21-1	25.00000	0.00353
			Copolymer of Maleic and Acrylic acid	26677-99-6	10.00000	0.00148
			Potassium salt of diethylene triamine penta (methylene phosphonic acid)	15827-60-8	7.50000	0.00127
			Phosphino carboxylic acid polymer	71050-62-9	5.00000	0.00081
			Hexamethylene tramine penta (methylene phosphonic acid)	34690-00-1	5.00000	0.00081
			Hexamethylene diamine penta (methylene phosphonic acid)	23605-74-5	2.00000	0.00033
K-BAC 1020	U.S. Well Services	Anti-Bacterial Agent				
			Polyethylene Glycol	25322-68-3	50.00000	0.00476
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00417
			Deionized Water	7732-18-5	30.00000	0.00255
AP One	U.S. Well Services	Gel Breakers				
			Ammonium Persulfate	7727-54-0	100.00000	0.00225
AI-301	U.S. Well Services	Acid Corrosion Inhibitors				
			Diethylene Glycol	111-46-6	30.00000	0.00014
			Methenamine	100-97-0	20.00000	0.00011
			Hydrogen Chloride	7647-01-0	10.00000	0.00005
			Polyethylene polyamine	68603-67-8	10.00000	0.00004
			Coco amine	61791-14-8	5.00000	0.00002

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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.

* 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(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

LATITUDE 39°20'00" 1,554'

4,301' TO BOTTOM HOLE

LATITUDE 39°20'00"

LONGITUDE 80°57'30"

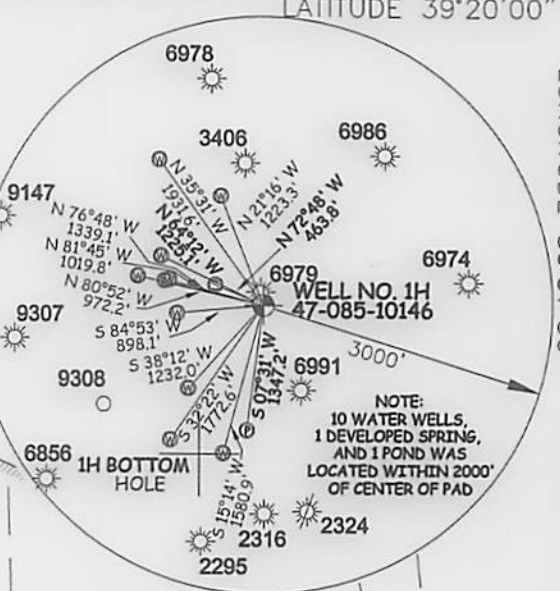
5,102' TO BOTTOM HOLE

12,248'

LONGITUDE 80°57'30"

Antero Resources Corporation
Well No. Bow Unit 1H
47-085-10146 (AS DRILLED)

WV NORTH ZONE
GRID NORTH



NOTE:
10 WATER WELLS,
1 DEVELOPED SPRING,
AND 1 POND WAS
LOCATED WITHIN 2000'
OF CENTER OF PAD

AS DRILLED DATA:
WELL 1H TOP HOLE INFORMATION:
N: 294,644ft E: 1,585,757ft
LAT: 39°17'58.94" LON: 80°57'49.77"
BOTTOM HOLE INFORMATION:
N: 301,834ft E: 1,583,127ft
LAT: 39°19'09.58" LON: 80°58'24.72"
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 1H TOP HOLE INFORMATION:
N: 4,350,046m E: 503,134m
BOTTOM HOLE INFORMATION:
N: 4,352,223m E: 502,296m

JOB # 14-004WA
DRAWING # BOWUNIT1HAD
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
--- Proposed Well Path
--- As Drilled Well Path

DATE 07/01/15
OPERATOR'S WELL# BOWUNIT#1H

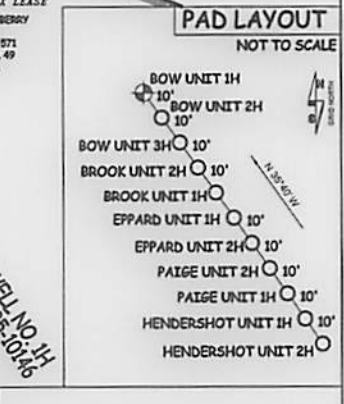


STATE OF WEST VIRGINIA, DIVISION
OF ENVIRONMENTAL PROTECTION,
OFFICE OF OIL AND GAS

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

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS
WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL
(IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X
LOCATION: ELEVATION 1,124' - ORIGINAL 1,118' - AS DRILLED WATERSHED NORTH FORK HUGHES RIVER
QUADRANGLE PENNSBORO 7.5 DISTRICT CLAY COUNTY RITCHIE
SURFACE OWNER LINDA C. DEWBERRY TRUST ACREAGE 151 ACRES +/-
OIL & GAS ROYALTY OWNER J.M. WILSON ET UX; FLOYD W. COLLINS ET UX; JERRY F. DENNING ET UX;
LISA DAWN SWISHER; LANDO GLENN ROBINSON JR.

API WELL # 47 - 085 - 10146
STATE COUNTY PERMIT
ESTIMATED DEPTH 6,405' TVD 13,839' MD
DESIGNATED AGENT CT CORPORATION SYSTEM-DIANNA STAMPER
ADDRESS 1615 WYNKOOP STREET DENVER, CO 80202 ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313



NOTE:
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 SHOWN HEREON WAS PROVIDED BY ALLEGHENY SURVEYS, INC.
3. AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
4. WLS IS NOT CERTIFYING THE DATA AND INFORMATION PROVIDED LISTED IN THIS REPORT. ONLY THE RELATIONSHIP TO THE LEASE BOUNDARIES.
5. WLS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.

COUNTY NAME PERMIT

10/23/2015