



Antero Resources
Ruth Unit 2H
Harrison County West Virginia
Northing: 14254530.66
Eastings: 1764845.07
As Drilled

WELL DETAILS: Ruth Unit 2H

+N-S	+E-W	Northing	Eastings	Longitude	Slot
0.0	0.0	14254530.66	1764845.07	15° 12' 52.6" N 80° 33' 37.638" W	

REFERENCE INFORMATION

Cevoidware (N6) Reference: Well Ruth Unit 2H, Grid North
 Section (20) Reference: Slot: 0.0 (0.000')
 Measurement Method: Minimum Constant

PROJECT DETAILS: Harrison County West Virginia
 Geoidic System: NAD 1983 (NAD83) (US Survey Feet)
 Ellipsoid: Clarke 1866
 Zone: Zone 17N (84 W to 78 W)
 System Datum: Mean Sea Level



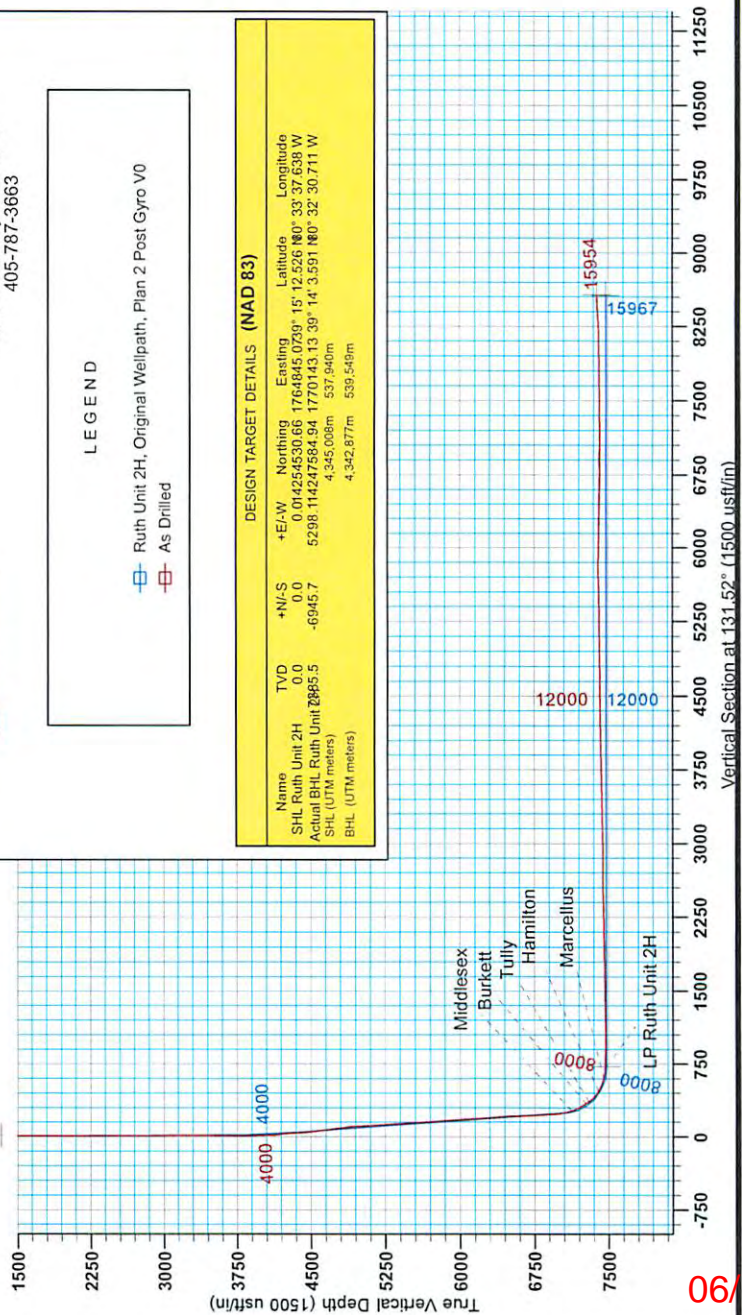
Genie Lightfoot
Scientific Drilling
421 South Eagle Lane
Oklahoma City Oklahoma
405-787-3663

LEGEND

- Ruth Unit 2H, Original Wellpath, Plan 2 Post Gyro V0
- As Drilled

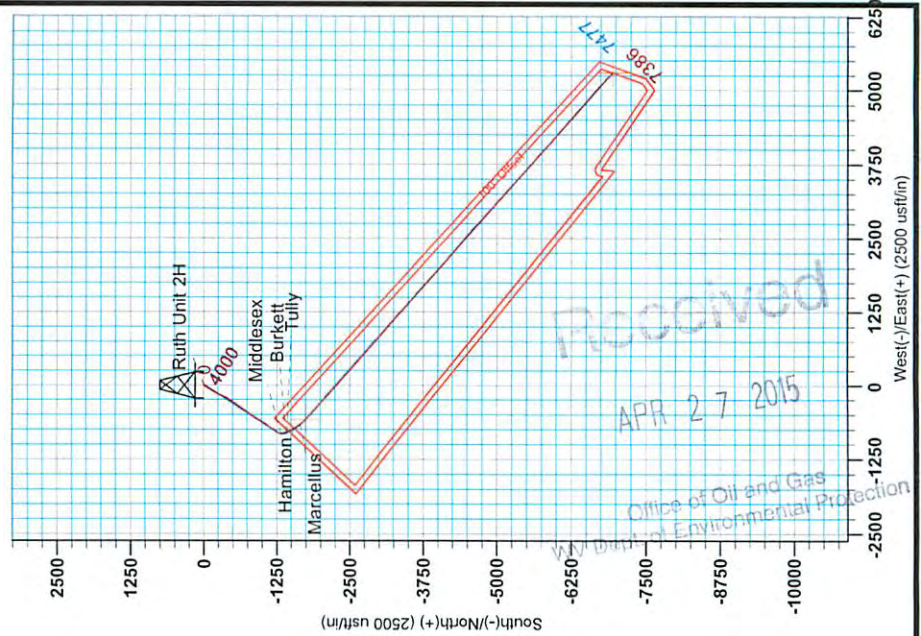
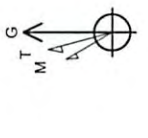
DESIGN TARGET DETAILS (NAD 83)

Name	TVD	+N-S	+E-W	Northing	Eastings	Latitude	Longitude
SHL Ruth Unit 2H	0.0	0.0	0.0	0.01425453066	1764845.0729	15° 12' 52.6" N	80° 33' 37.638" W
Actual BHL Ruth Unit 2H	2885.5	-6945.7	5298	114247584.94	1770143.13	39° 14' 3.591" N	80° 32' 30.711" W
SHL (UTM meters)				4,345,008m	537,940m		
BHL (UTM meters)				4,342,877m	539,549m		



To convert Magnetic North to Grid, Subtract 8.89°
 To convert True North to Grid, Subtract 0.28°

Admutha to Grid North
 Magnetic North: -8.89°
 Magnetic Field
 Strength: 52376.9nT
 Dip Angle: 66.86°
 Date: 5/21/2013
 Model: IGRF2010



Office of Oil and Gas
 Department of Environmental Protection
 Received
 APR 27 2015

06/12/2015



Antero Resources

Harrison County West Virginia
Ruth/Norris/Nellie/Ford Pad
Ruth Unit 2H
Original Wellpath

Design: Original Wellpath

EOW Completion Report

01 July, 2013

Received

APR 27 2015

Office of Oil and Gas
West Virginia Department of Environmental Protection



06/12/2015



Company:	Antero Resources	Local Co-ordinate Reference:	Well Ruth Unit 2H
Project:	Harrison County West Virginia	TVD Reference:	Ruth 2H 1376 GL + 24 KB @ 1400.0usft (Original)
Site:	Ruth/Norris/Nellie/Ford Pad	MD Reference:	Ruth 2H 1376 GL + 24 KB @ 1400.0usft (Original)
Well:	Ruth Unit 2H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	Original Wellpath	Database:	Oklahoma District

APR 27 2015

Office of Oil and Gas
WV Dept. of Environmental Protection

Project	Harrison County West Virginia, Harrison County, USA		
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	Ruth/Norris/Nellie/Ford Pad				
Site Position:	Northing:	14,254,530.66 usft	Latitude:	39° 15' 12.526 N	
From: Map	Easting:	1,764,845.07 usft	Longitude:	80° 33' 37.638 W	
Position Uncertainty:	2.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.28 °

Well	Ruth Unit 2H, Marcellus				
Well Position	+N/-S	0.0 usft	Northing:	14,254,530.66 usft	
	+E/-W	0.0 usft	Easting:	1,764,845.07 usft	
Position Uncertainty	2.0 usft	Wellhead Elevation:	1,400.0 usft	Ground Level:	1,376.0 usft

Wellbore	Original Wellpath				
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/21/2013	-8.58	66.86	52,379

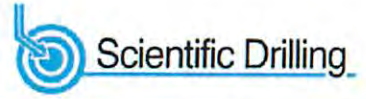
Design	Original Wellpath				
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Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	131.52

Survey Program	Date	7/1/2013			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	3,427.0	Survey #1 Gyro (Original Wellpath)	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper	
3,523.0	15,954.0	Survey #2 MWD (Original Wellpath)	SRG-GYRO-MS	surface readout gyro multishot	

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
100.0	0.29	155.33	100.0	-0.2	0.1	0.2	0.29
200.0	0.27	166.84	200.0	-0.7	0.3	0.7	0.06
300.0	0.19	134.09	300.0	-1.0	0.4	1.0	0.15
400.0	0.19	177.93	400.0	-1.3	0.6	1.3	0.14
500.0	0.07	125.81	500.0	-1.5	0.6	1.5	0.16
600.0	0.23	191.03	600.0	-1.7	0.6	1.6	0.21
700.0	0.37	154.79	700.0	-2.2	0.7	2.0	0.23
800.0	0.31	105.30	800.0	-2.6	1.1	2.6	0.29
900.0	0.15	194.85	900.0	-2.8	1.4	2.9	0.34
1,000.0	0.15	151.61	1,000.0	-3.0	1.4	3.1	0.11



Company:	Antero Resources	Local Co-ordinate Reference:	Well Ruth Unit 2H
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Site:	Ruth/Norris/Nellie/Ford Pad	MD Reference:	Ruth 2H 1376 GL + 24 KB @ 1400.0usft (Original
Well:	Ruth Unit 2H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	Original Wellpath	Database:	Oklahoma District

APR 27 2013
Office of Oil and Gas Regulation
WV Dept. of Environmental Protection

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	EW (usft)	V. Sec (usft)	DLeg (°/100usft)
1,100.0	0.12	183.90	1,100.0	-3.3	1.4	3.2	0.08
1,200.0	0.06	96.33	1,200.0	-3.4	1.5	3.3	0.13
1,300.0	0.02	276.66	1,300.0	-3.4	1.5	3.4	0.08
1,400.0	0.15	184.22	1,400.0	-3.5	1.5	3.4	0.15
1,500.0	0.27	164.40	1,500.0	-3.9	1.5	3.7	0.14
1,600.0	0.18	184.48	1,600.0	-4.2	1.6	4.0	0.12
1,700.0	0.04	228.58	1,700.0	-4.4	1.6	4.1	0.15
1,800.0	0.48	175.83	1,800.0	-4.9	1.6	4.4	0.46
1,900.0	0.24	187.02	1,900.0	-5.5	1.6	4.8	0.25
2,000.0	0.38	188.81	2,000.0	-6.0	1.5	5.1	0.14
2,100.0	0.37	194.20	2,100.0	-6.7	1.4	5.4	0.04
2,200.0	0.18	181.74	2,200.0	-7.1	1.3	5.7	0.20
2,300.0	0.26	193.17	2,300.0	-7.5	1.2	5.9	0.09
2,400.0	0.26	170.44	2,400.0	-8.0	1.2	6.2	0.10
2,500.0	0.22	149.99	2,500.0	-8.3	1.3	6.5	0.09
2,600.0	0.19	158.09	2,600.0	-8.7	1.5	6.9	0.04
2,700.0	0.39	132.51	2,700.0	-9.1	1.8	7.4	0.23
2,800.0	0.31	140.52	2,800.0	-9.5	2.2	8.0	0.09
2,900.0	0.41	134.65	2,900.0	-10.0	2.7	8.6	0.11
3,000.0	0.55	133.69	3,000.0	-10.5	3.3	9.4	0.14
3,100.0	0.53	97.94	3,100.0	-10.9	4.1	10.3	0.33
3,200.0	0.46	105.03	3,200.0	-11.1	4.9	11.0	0.09
3,300.0	0.20	125.27	3,300.0	-11.3	5.4	11.6	0.28
3,400.0	0.12	98.48	3,400.0	-11.4	5.7	11.8	0.11
3,427.0	0.18	51.20	3,427.0	-11.4	5.7	11.9	0.49
3,523.0	2.27	250.72	3,522.9	-11.9	4.1	11.0	2.54
3,617.0	5.57	241.40	3,616.7	-14.7	-1.7	8.5	3.56
3,711.0	8.37	233.16	3,710.0	-21.0	-11.2	5.6	3.16
3,834.0	10.46	213.80	3,831.4	-35.7	-24.6	5.3	3.06
3,928.0	12.62	212.97	3,923.5	-51.4	-34.9	7.9	2.30
4,022.0	15.27	211.62	4,014.7	-70.5	-47.0	11.6	2.84
4,116.0	18.15	210.79	4,104.7	-93.7	-61.0	16.4	3.07
4,211.0	21.15	208.51	4,194.2	-121.4	-76.7	23.1	3.26
4,304.0	23.01	212.32	4,280.3	-151.5	-94.4	29.7	2.52
4,494.0	22.19	208.69	4,455.8	-214.4	-131.5	43.6	0.85
4,587.0	23.60	206.95	4,541.4	-246.4	-148.4	52.2	1.68
4,682.0	25.30	202.53	4,627.9	-282.1	-164.8	63.6	2.63
4,776.0	27.00	205.39	4,712.3	-319.9	-181.6	76.1	2.25
4,870.0	27.85	206.77	4,795.7	-358.8	-200.7	87.6	1.13
4,965.0	24.86	206.56	4,880.9	-396.5	-219.6	98.4	3.15
5,059.0	23.94	212.56	4,966.5	-430.3	-238.7	106.5	2.81
5,153.0	25.52	215.73	5,051.8	-462.8	-260.8	111.5	2.19
5,247.0	26.09	213.32	5,136.5	-496.5	-284.0	116.5	1.27
5,341.0	26.27	214.94	5,220.8	-530.8	-307.3	121.8	0.78



Received

EOW Completion Report



APR 27 2015

Company:	Antero Resources	Local Co-ordinate Reference:	Well Ruth Unit 2H
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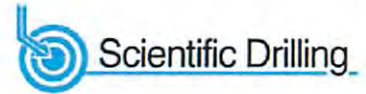
Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
5,436.0	26.46	213.65	5,306.0	-565.7	-331.0	127.1	0.64
5,530.0	27.16	213.37	5,389.8	-601.0	-354.4	133.0	0.76
5,624.0	27.82	215.20	5,473.2	-636.9	-378.9	138.5	1.14
5,718.0	27.18	215.34	5,556.6	-672.3	-403.9	143.2	0.68
5,812.0	27.23	215.00	5,640.2	-707.4	-428.7	148.0	0.17
5,906.0	27.10	214.19	5,723.8	-742.8	-453.1	153.1	0.42
6,000.0	26.74	213.84	5,807.7	-778.0	-476.9	158.7	0.42
6,094.0	26.00	210.39	5,891.9	-813.4	-499.1	165.5	1.81
6,189.0	25.83	213.08	5,977.3	-848.7	-520.9	172.6	1.25
6,283.0	26.00	213.16	6,061.9	-883.1	-543.3	178.6	0.18
6,377.0	25.38	213.28	6,146.6	-917.2	-565.7	184.4	0.66
6,471.0	25.29	214.60	6,231.6	-950.5	-588.1	189.8	0.61
6,565.0	24.32	210.38	6,316.9	-983.8	-609.3	195.9	2.15
6,692.0	20.82	207.81	6,434.1	-1,026.3	-633.1	206.3	2.86
6,787.0	23.54	216.33	6,522.1	-1,056.5	-652.2	212.0	4.43
6,881.0	23.21	219.44	6,608.4	-1,086.0	-675.1	214.4	1.36
6,975.0	27.39	216.38	6,693.4	-1,117.7	-699.7	217.0	4.66
7,069.0	28.42	215.41	6,776.5	-1,153.3	-725.5	221.3	1.20
7,163.0	28.14	216.29	6,859.2	-1,189.4	-751.6	225.7	0.53
7,257.0	30.36	215.12	6,941.2	-1,226.7	-778.3	230.4	2.44
7,288.0	29.57	215.52	6,968.1	-1,239.4	-787.3	232.1	2.63
7,320.0	28.75	207.89	6,996.1	-1,252.6	-795.5	234.7	11.89
7,348.0	29.38	202.98	7,020.5	-1,264.9	-801.3	238.5	8.81
7,383.0	29.64	201.60	7,051.0	-1,280.8	-807.9	244.2	2.08
7,414.0	29.14	195.11	7,078.0	-1,295.2	-812.7	250.1	10.40
7,443.0	28.93	187.99	7,103.4	-1,309.0	-815.5	257.2	11.93
7,469.0	29.23	181.40	7,126.1	-1,321.6	-816.5	264.7	12.38
Middlesex							
7,477.0	29.39	179.40	7,133.1	-1,325.5	-816.5	267.3	12.38
7,508.0	29.90	171.23	7,160.0	-1,340.8	-815.3	278.4	13.13
7,537.0	31.12	161.98	7,185.0	-1,355.0	-811.8	290.4	16.72
7,571.0	32.15	157.23	7,214.0	-1,371.7	-805.6	306.1	7.93
7,602.0	32.62	160.59	7,240.2	-1,387.2	-799.7	320.8	6.00
7,631.0	35.02	160.77	7,264.3	-1,402.5	-794.3	334.9	8.28
7,638.0	35.68	160.23	7,270.0	-1,406.3	-793.0	338.5	10.43
Burkett							
7,665.0	38.25	158.31	7,291.5	-1,421.5	-787.2	352.8	10.43
7,673.0	39.39	158.03	7,297.8	-1,426.1	-785.3	357.3	14.44
Tully							
7,696.0	42.68	157.31	7,315.1	-1,440.1	-779.6	370.9	14.44
7,725.0	47.35	157.86	7,335.6	-1,459.0	-771.8	389.3	16.16
7,759.0	52.32	157.34	7,357.5	-1,483.0	-761.9	412.6	14.66
7,790.0	56.01	155.67	7,375.7	-1,506.1	-751.9	435.4	12.68
7,819.0	58.67	152.15	7,391.3	-1,528.0	-741.1	458.0	13.73



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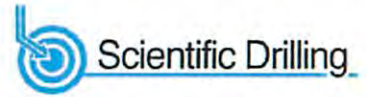
Survey

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7,828.0	59.89	151.14	7,395.9	-1,534.8	-737.4	465.2	16.62
Hamilton							
7,853.0	63.31	148.46	7,407.8	-1,553.8	-726.4	486.1	16.62
7,884.0	68.50	146.97	7,420.5	-1,577.7	-711.3	513.3	17.31
7,913.0	71.22	146.57	7,430.5	-1,600.5	-696.3	539.6	9.47
7,947.0	73.24	145.18	7,440.8	-1,627.3	-678.2	570.9	7.10
7,976.0	76.08	141.73	7,448.5	-1,649.7	-661.5	598.3	15.09
Marcellus							
7,979.0	76.38	141.38	7,449.2	-1,652.0	-659.7	601.2	15.09
8,007.0	80.05	137.38	7,454.9	-1,672.8	-641.9	628.3	19.16
8,042.0	82.20	136.08	7,460.3	-1,698.0	-618.2	662.7	7.16
8,073.0	83.98	136.24	7,464.1	-1,720.2	-596.9	693.4	5.76
8,167.0	90.44	134.72	7,468.6	-1,787.1	-531.1	787.0	7.06
8,260.0	88.31	132.99	7,469.7	-1,851.5	-464.0	879.9	2.95
8,354.0	89.46	130.95	7,471.5	-1,914.4	-394.1	973.9	2.49
8,449.0	89.80	130.89	7,472.1	-1,976.6	-322.4	1,068.9	0.36
8,543.0	91.04	132.36	7,471.4	-2,039.0	-252.1	1,162.9	2.05
8,637.0	90.67	132.82	7,470.0	-2,102.6	-182.9	1,256.9	0.63
8,731.0	90.40	133.71	7,469.1	-2,167.0	-114.5	1,350.8	0.99
8,823.0	92.18	131.71	7,467.1	-2,229.4	-46.9	1,442.8	2.91
8,915.0	92.80	130.81	7,463.1	-2,290.0	22.2	1,534.7	1.19
9,006.0	91.18	130.96	7,459.9	-2,349.6	91.0	1,625.6	1.79
9,097.0	91.15	131.05	7,458.0	-2,409.3	159.6	1,716.6	0.10
9,188.0	90.70	131.37	7,456.6	-2,469.2	228.1	1,807.6	0.61
9,280.0	90.94	131.09	7,455.3	-2,529.8	297.3	1,899.6	0.40
9,372.0	90.94	132.04	7,453.8	-2,590.9	366.1	1,991.5	1.03
9,462.0	90.53	131.27	7,452.6	-2,650.7	433.3	2,081.5	0.97
9,551.0	90.84	131.14	7,451.5	-2,709.3	500.3	2,170.5	0.38
9,644.0	90.60	131.27	7,450.4	-2,770.6	570.2	2,263.5	0.29
9,734.0	91.11	131.13	7,449.0	-2,829.8	638.0	2,353.5	0.59
9,825.0	91.31	130.61	7,447.1	-2,889.4	706.8	2,444.5	0.61
9,919.0	90.71	130.29	7,445.4	-2,950.3	778.3	2,538.4	0.72
10,013.0	89.90	129.27	7,444.9	-3,010.5	850.5	2,632.4	1.39
10,107.0	90.37	129.70	7,444.7	-3,070.3	923.1	2,726.3	0.68
10,201.0	89.83	131.30	7,444.6	-3,131.3	994.5	2,820.3	1.80
10,295.0	90.67	131.46	7,444.1	-3,193.4	1,065.1	2,914.3	0.91
10,389.0	90.37	131.65	7,443.3	-3,255.8	1,135.4	3,008.3	0.38
10,483.0	92.52	133.14	7,440.9	-3,319.2	1,204.8	3,102.3	2.78
10,578.0	90.84	131.82	7,438.1	-3,383.3	1,274.8	3,197.2	2.25
10,672.0	91.21	131.78	7,436.5	-3,445.9	1,344.9	3,291.2	0.40
10,766.0	90.90	130.66	7,434.7	-3,507.9	1,415.6	3,385.2	1.24
10,861.0	90.70	129.02	7,433.4	-3,568.7	1,488.5	3,480.1	1.74
10,954.0	90.90	131.61	7,432.1	-3,628.9	1,559.4	3,573.1	2.79
11,049.0	90.23	129.83	7,431.2	-3,690.8	1,631.4	3,668.1	2.00
11,143.0	91.48	132.37	7,429.8	-3,752.6	1,702.2	3,762.0	3.01



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EOW Completion Report

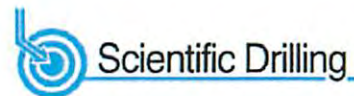


Company:	Antero Resources	Local Co-ordinate Reference:	Well Ruth Unit 2H
Project:	Harrison County West Virginia	TVD Reference:	Ruth 2H 1376 GL + 24 KB @ 1400.0usft (Original
Site:	Ruth/Norris/Nellie/Ford Pad	MD Reference:	Ruth 2H 1376 GL + 24 KB @ 1400.0usft (Original
Well:	Ruth Unit 2H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	Original Wellpath	Database:	Oklahoma District

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 Office of Oil and Gas
 WV Dept. of Environmental Protection

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
11,237.0	91.28	132.56	7,427.5	-3,816.1	1,771.6	3,856.0	0.29
11,331.0	91.31	132.71	7,425.4	-3,879.7	1,840.7	3,950.0	0.16
11,425.0	91.41	133.64	7,423.1	-3,944.0	1,909.2	4,043.9	0.99
11,520.0	90.91	132.24	7,421.2	-4,008.7	1,978.8	4,138.8	1.56
11,614.0	90.47	131.66	7,420.1	-4,071.5	2,048.7	4,232.8	0.77
11,708.0	91.65	131.74	7,418.3	-4,134.1	2,118.8	4,326.8	1.26
11,802.0	91.55	130.87	7,415.7	-4,196.1	2,189.4	4,420.8	0.93
11,897.0	90.97	130.93	7,413.6	-4,258.3	2,261.2	4,515.7	0.61
11,991.0	90.10	130.81	7,412.8	-4,319.8	2,332.3	4,609.7	0.93
12,085.0	90.57	129.97	7,412.2	-4,380.7	2,403.9	4,703.7	1.02
12,179.0	90.98	129.51	7,410.9	-4,440.8	2,476.1	4,797.7	0.66
12,273.0	90.27	129.05	7,409.9	-4,500.3	2,548.9	4,891.6	0.90
12,367.0	89.77	131.53	7,409.9	-4,561.1	2,620.6	4,985.5	2.69
12,461.0	89.90	132.69	7,410.1	-4,624.1	2,690.3	5,079.5	1.24
12,555.0	90.47	132.85	7,409.8	-4,687.9	2,759.3	5,173.5	0.63
12,649.0	90.60	133.17	7,409.0	-4,752.0	2,828.1	5,267.5	0.37
12,743.0	90.67	132.79	7,407.9	-4,816.1	2,896.8	5,361.4	0.41
12,838.0	90.24	132.72	7,407.2	-4,880.6	2,966.6	5,456.4	0.46
12,932.0	92.02	131.25	7,405.3	-4,943.5	3,036.4	5,550.4	2.46
13,026.0	91.91	131.21	7,402.1	-5,005.4	3,107.1	5,644.3	0.12
13,120.0	91.91	131.01	7,399.0	-5,067.2	3,177.9	5,738.3	0.21
13,214.0	88.65	130.82	7,398.5	-5,128.7	3,248.9	5,832.3	3.47
13,308.0	87.79	130.65	7,401.4	-5,190.0	3,320.1	5,926.2	0.93
13,402.0	90.13	132.09	7,403.1	-5,252.1	3,390.6	6,020.2	2.92
13,496.0	89.12	132.71	7,403.7	-5,315.5	3,460.0	6,114.2	1.26
13,590.0	89.36	133.01	7,405.0	-5,379.5	3,528.9	6,208.1	0.41
13,684.0	88.33	132.06	7,406.9	-5,443.0	3,598.2	6,302.1	1.49
13,779.0	88.09	132.15	7,409.9	-5,506.7	3,668.6	6,397.0	0.27
13,873.0	89.30	131.24	7,412.0	-5,569.2	3,738.8	6,491.0	1.61
13,967.0	89.40	130.98	7,413.1	-5,631.0	3,809.6	6,585.0	0.30
14,061.0	89.40	130.72	7,414.0	-5,692.4	3,880.7	6,679.0	0.28
14,155.0	89.90	131.86	7,414.6	-5,754.5	3,951.3	6,773.0	1.32
14,249.0	90.54	132.22	7,414.3	-5,817.4	4,021.2	6,867.0	0.78
14,344.0	89.70	131.97	7,414.1	-5,881.1	4,091.6	6,962.0	0.92
14,438.0	88.99	130.70	7,415.1	-5,943.2	4,162.2	7,056.0	1.55
14,532.0	89.77	130.00	7,416.2	-6,004.0	4,233.9	7,149.9	1.11
14,626.0	91.21	131.49	7,415.3	-6,065.4	4,305.1	7,243.9	2.20
14,720.0	90.71	131.59	7,413.8	-6,127.7	4,375.4	7,337.9	0.54
14,815.0	90.00	130.78	7,413.2	-6,190.3	4,446.9	7,432.9	1.13
14,909.0	90.77	131.97	7,412.6	-6,252.4	4,517.4	7,526.9	1.51
15,004.0	90.94	129.62	7,411.1	-6,314.4	4,589.3	7,621.9	2.48
15,098.0	90.78	130.50	7,409.7	-6,374.9	4,661.3	7,715.8	0.95
15,192.0	90.84	132.19	7,408.4	-6,437.0	4,731.8	7,809.8	1.80
15,286.0	90.23	131.11	7,407.5	-6,499.5	4,802.1	7,903.8	1.32



Company:	Antero Resources	Local Co-ordinate Reference:	Well Ruth Unit 2H
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Site:	Ruth/Norris/Nellie/Ford Pad	MD Reference:	Ruth 2H 1376 GL + 24 KB @ 1400.0usft (Original
Well:	Ruth Unit 2H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	Original Wellpath	Database:	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
15,380.0	90.47	130.76	7,406.9	-6,561.1	4,873.1	7,997.8	0.45
15,475.0	89.87	129.39	7,406.7	-6,622.2	4,945.8	8,092.8	1.57
15,569.0	91.24	131.03	7,405.7	-6,682.9	5,017.6	8,186.7	2.27
15,663.0	93.91	133.98	7,401.5	-6,746.3	5,086.8	8,280.6	4.23
15,757.0	94.16	134.05	7,394.9	-6,811.5	5,154.2	8,374.3	0.28
15,852.0	92.43	133.11	7,389.5	-6,876.9	5,222.9	8,469.1	2.07
15,904.0	92.12	132.28	7,387.4	-6,912.1	5,261.1	8,521.0	1.70
15,954.0	92.12	132.28	7,385.5	-6,945.7	5,298.1	8,571.0	0.00

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,469.0	7,126.1	-1,321.6	-816.5	Middlesex
7,638.0	7,270.0	-1,406.3	-793.0	Burkett
7,673.0	7,297.8	-1,426.1	-785.3	Tully
7,828.0	7,395.9	-1,534.8	-737.4	Hamilton
7,976.0	7,448.5	-1,649.7	-661.5	Marcellus

Checked By: _____ Approved By: _____ Date: _____

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