



Randall Unit 1H
Doddridge County WV
Northing: 14230768.05
Eastings: 1736311.65
As Drilled



WELL DETAILS Randall Unit 1H
 Ground Level: 1332.0
 Easting: 1736311.6539° 11' 18.783 160° 39' 41.621 W
 Northing: 14230768.05
 Latitude: 39° 41' 18.783 160° 39' 41.621 W
 Longitude: 1736311.6539° 11' 18.783 160° 39' 41.621 W

PROJECT DETAILS: Doddridge County WV
 Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: NAD 1927 (NADCON CONUS)
 Ellipsoid: Clarke 1866
 Zone: Zone 17N (84 W to 78 W)
 System Datum: Mean Sea Level

LEGEND

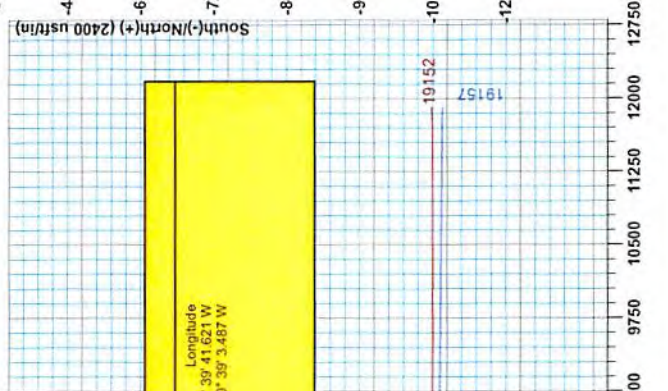
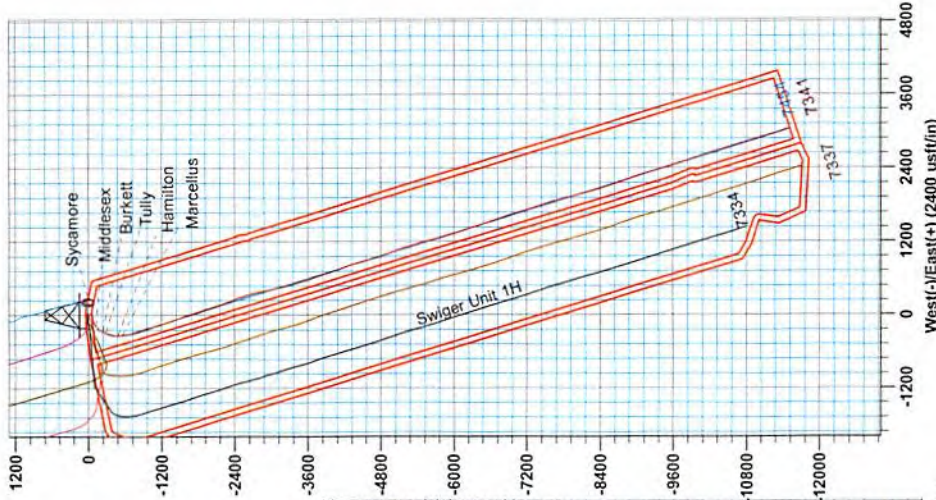
- ✂ Dorothy Unit 2H, Original Wellpath, As Drilled V0
- ✂ Swiger Unit 2H, Original Wellpath, As Drilled V0
- ✂ Cross Unit 1H, Sidetrack 1, ST1 As Drilled V0
- ✂ Cross Unit 1H, Original Wellpath, As Drilled V0
- ✂ Swiger Unit 1H, Original Wellpath, As Drilled V0
- ✂ Dorothy Unit 1H, Original Wellpath, As Drilled V0
- ✂ Cross Unit 2H, Original Wellpath, As Drilled V0
- ✂ Randall Unit 1H, Original Wellpath, Plan 8 V0
- ✂ As Drilled

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Eastings	Latitude	Longitude
SHL Randall Unit 1H	0.0	0.0	0.0	0.014230768 05	1736311 6539	11° 18.783 160° 39' 41.621 W	3045.814219245 70 1739357 42 39° 5' 24.739 N 80° 39' 3.487 W
Actual BHL Randall Unit 1H	7341.4	-11522.4					

Azimuths to Grid North
 True North: -0.21°
 Magnetic North: -8.76°
 Magnetic Field
 Strength: 52159.75nT
 Dip Angle: 66.75°
 Date: 9/15/2014
 Model: BGGM2014

To convert Magnetic North to Grid, Subtract 8.76°
 To convert True North to Grid, Subtract 0.21°

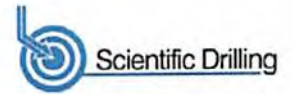


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EOW Completion Report



Company:	Antero	Local Co-ordinate Reference:	Well Randall Unit 1H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: GL 1332' + KB 25' @ 1357.0usft
Site:	Stewart Pad	MD Reference:	Patterson 347: GL 1332' + KB 25' @ 1357.0usft
Well:	Randall Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	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	Stewart Pad				
Site Position:		Northing:	14,230,768.62 usft	Latitude:	39° 11' 18.788 N
From:	Map	Easting:	1,736,331.61 usft	Longitude:	80° 39' 41.367 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.21 °

Well	Randall Unit 1H, Marcellus					
Well Position	+N/-S	0.0 usft	Northing:	14,230,768.05 usft	Latitude:	39° 11' 18.783 N
	+E/-W	0.0 usft	Easting:	1,736,311.65 usft	Longitude:	80° 39' 41.621 W
Position Uncertainty	2.0 usft		Wellhead Elevation:	1,357.0 usft	Ground Level:	1,332.0 usft

Wellbore	Original Wellpath				
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	9/15/2014	-8.54	66.75	52,160

Design	As Drilled				
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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	162.85

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Survey Program	From (usft)	To (usft)	Date	Survey (Wellbore)	Tool Name	Description
	37.0	6,584.5	12/19/2014	Survey #6 Final Gyro (Original Wellpath)	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
	6,584.5	19,152.0		Survey #2 MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1

Survey	MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	EW (usft)	V. Sec (usft)	DLeg (°/100usft)
	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
	37.0	0.02	162.92	37.0	0.0	0.0	0.0	0.05
	62.0	0.04	162.92	62.0	0.0	0.0	0.0	0.08
	87.0	0.06	162.92	87.0	0.0	0.0	0.0	0.08
	112.0	0.08	164.39	112.0	-0.1	0.0	0.1	0.08
	137.0	0.15	184.17	137.0	-0.1	0.0	0.1	0.32
	162.0	0.21	189.61	162.0	-0.2	0.0	0.2	0.25
	187.0	0.02	219.84	187.0	-0.2	0.0	0.2	0.77
	212.0	0.08	166.52	212.0	-0.3	0.0	0.3	0.28
	237.0	0.04	201.57	237.0	-0.3	0.0	0.3	0.21
	262.0	0.14	153.71	262.0	-0.3	0.0	0.3	0.47



EOW Completion Report



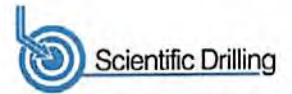
Company: Antero	Local Co-ordinate Reference: Well Randall Unit 1H
Project: Doddridge County WV	TVD Reference: Patterson 347: GL 1332' + KB 25' @ 1357.0usft
Site: Stewart Pad	MD Reference: Patterson 347: GL 1332' + KB 25' @ 1357.0usft
Well: Randall Unit 1H	North Reference: Grid
Wellbore: Original Wellpath	Survey Calculation Method: Minimum Curvature
Design: As Drilled	Database: Oklahoma District

OCT 30 2017

Survey								WV Department of Environmental Protection	
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)		
287.0	0.09	200.22	287.0	-0.4	0.0	0.4	0.41		
312.0	0.12	181.52	312.0	-0.4	0.0	0.4	0.18		
337.0	0.06	167.60	337.0	-0.5	0.0	0.4	0.25		
362.0	0.08	180.42	362.0	-0.5	0.0	0.5	0.10		
387.0	0.07	174.94	387.0	-0.5	0.0	0.5	0.05		
412.0	0.14	188.52	412.0	-0.6	0.0	0.5	0.30		
437.0	0.11	160.32	437.0	-0.6	0.0	0.6	0.27		
462.0	0.17	202.69	462.0	-0.7	0.0	0.6	0.46		
487.0	0.12	155.46	487.0	-0.7	0.0	0.7	0.50		
512.0	0.28	174.27	512.0	-0.8	0.0	0.8	0.68		
537.0	0.25	200.91	537.0	-0.9	0.0	0.9	0.50		
562.0	0.12	172.44	562.0	-1.0	0.0	1.0	0.62		
587.0	0.42	146.86	587.0	-1.1	0.1	1.1	1.26		
612.0	1.06	140.39	612.0	-1.4	0.2	1.4	2.58		
637.0	2.12	141.87	637.0	-1.9	0.7	2.0	4.24		
662.0	3.22	144.15	662.0	-2.8	1.4	3.1	4.42		
687.0	3.48	145.73	686.9	-4.0	2.2	4.5	1.10		
712.0	4.24	151.60	711.9	-5.5	3.1	6.1	3.42		
737.0	5.06	155.29	736.8	-7.3	4.0	8.1	3.49		
762.0	5.11	156.01	761.7	-9.3	4.9	10.3	0.32		
787.0	5.19	155.90	786.6	-11.4	5.8	12.6	0.32		
812.0	5.17	156.36	811.5	-13.4	6.7	14.8	0.18		
837.0	5.28	156.68	836.4	-15.5	7.6	17.1	0.46		
862.0	5.50	158.17	861.3	-17.7	8.5	19.4	1.04		
887.0	5.90	159.70	886.1	-20.0	9.4	21.9	1.71		
912.0	5.86	160.08	911.0	-22.4	10.3	24.4	0.22		
937.0	5.92	159.63	935.9	-24.8	11.2	27.0	0.30		
962.0	6.01	159.97	960.7	-27.2	12.1	29.6	0.39		
987.0	6.07	159.57	985.6	-29.7	13.0	32.2	0.29		
1,012.0	6.06	159.67	1,010.5	-32.2	13.9	34.9	0.06		
1,037.0	6.01	160.10	1,035.3	-34.7	14.8	37.5	0.27		
1,062.0	5.99	160.35	1,060.2	-37.1	15.7	40.1	0.13		
1,087.0	5.86	160.54	1,085.1	-39.5	16.6	42.7	0.53		
1,112.0	5.50	162.25	1,109.9	-41.9	17.4	45.1	1.59		
1,137.0	4.06	172.36	1,134.8	-43.9	17.8	47.2	6.65		
1,162.0	3.50	177.68	1,159.8	-45.6	18.0	48.8	2.64		
1,187.0	2.72	176.90	1,184.7	-46.9	18.1	50.1	3.12		
1,212.0	1.93	175.95	1,209.7	-47.9	18.1	51.1	3.16		
1,237.0	1.81	175.65	1,234.7	-48.7	18.2	51.9	0.48		
1,262.0	1.57	179.30	1,259.7	-49.5	18.2	52.6	1.05		
1,287.0	1.33	181.97	1,284.7	-50.1	18.2	53.2	1.00		
1,312.0	1.07	180.88	1,309.7	-50.6	18.2	53.7	1.04		
1,337.0	0.90	177.98	1,334.7	-51.1	18.2	54.1	0.71		
1,362.0	0.82	170.25	1,359.7	-51.4	18.2	54.5	0.56		



EOW Completion Report



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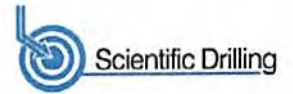
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MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (%/100usft)
1,387.0	0.81	170.10	1,384.7	-51.8	18.3	54.9	0.04
1,412.0	0.79	168.87	1,409.7	-52.1	18.4	55.2	0.11
1,437.0	0.65	168.18	1,434.7	-52.4	18.4	55.5	0.56
1,462.0	0.48	171.56	1,459.7	-52.7	18.5	55.8	0.69
1,487.0	0.39	176.71	1,484.7	-52.9	18.5	56.0	0.39
1,512.0	0.54	175.26	1,509.7	-53.1	18.5	56.2	0.60
1,537.0	0.43	180.39	1,534.7	-53.3	18.5	56.4	0.47
1,562.0	0.28	179.20	1,559.7	-53.4	18.5	56.5	0.60
1,587.0	0.29	176.64	1,584.7	-53.6	18.5	56.6	0.06
1,612.0	0.31	173.22	1,609.7	-53.7	18.5	56.8	0.11
1,637.0	0.03	254.25	1,634.7	-53.7	18.5	56.8	1.23
1,662.0	0.06	174.94	1,659.7	-53.8	18.5	56.8	0.25
1,687.0	0.15	121.98	1,684.7	-53.8	18.5	56.9	0.49
1,712.0	0.19	117.99	1,709.7	-53.8	18.6	56.9	0.17
1,737.0	0.24	120.77	1,734.7	-53.9	18.7	57.0	0.20
1,762.0	0.37	142.77	1,759.7	-54.0	18.8	57.1	0.69
1,787.0	0.31	130.32	1,784.7	-54.1	18.9	57.2	0.38
1,812.0	0.32	157.73	1,809.7	-54.2	19.0	57.4	0.60
1,837.0	0.16	168.87	1,834.7	-54.3	19.0	57.5	0.66
1,862.0	0.15	173.03	1,859.7	-54.4	19.0	57.5	0.06
1,887.0	0.12	180.60	1,884.7	-54.4	19.0	57.6	0.14
1,912.0	0.13	134.37	1,909.7	-54.5	19.0	57.6	0.39
1,937.0	0.14	123.13	1,934.7	-54.5	19.1	57.7	0.11
1,962.0	0.24	125.50	1,959.7	-54.5	19.1	57.8	0.40
1,987.0	0.29	124.20	1,984.7	-54.6	19.2	57.9	0.20
2,012.0	0.31	143.05	2,009.7	-54.7	19.3	58.0	0.40
2,037.0	0.29	162.97	2,034.7	-54.8	19.4	58.1	0.42
2,062.0	0.15	186.76	2,059.7	-54.9	19.4	58.2	0.66
2,087.0	0.06	189.57	2,084.7	-54.9	19.4	58.2	0.36
2,112.0	0.22	130.55	2,109.7	-55.0	19.4	58.3	0.78
2,137.0	0.24	110.25	2,134.7	-55.0	19.5	58.4	0.33
2,162.0	0.34	126.41	2,159.7	-55.1	19.6	58.4	0.51
2,187.0	0.26	150.39	2,184.7	-55.2	19.7	58.6	0.59
2,212.0	0.29	155.21	2,209.7	-55.3	19.8	58.7	0.15
2,237.0	0.29	143.22	2,234.7	-55.4	19.8	58.8	0.24
2,262.0	0.25	162.09	2,259.7	-55.5	19.9	58.9	0.39
2,287.0	0.26	150.30	2,284.7	-55.6	19.9	59.0	0.21
2,312.0	0.22	157.66	2,309.7	-55.7	20.0	59.1	0.20
2,337.0	0.13	63.47	2,334.7	-55.7	20.0	59.2	1.05
2,362.0	0.02	246.35	2,359.7	-55.7	20.0	59.2	0.60
2,387.0	0.13	90.71	2,384.7	-55.7	20.1	59.2	0.59
2,412.0	0.15	126.00	2,409.7	-55.8	20.1	59.2	0.35
2,437.0	0.19	121.25	2,434.7	-55.8	20.2	59.3	0.17
2,462.0	0.26	145.21	2,459.7	-55.9	20.3	59.3	0.46
2,487.0	0.18	149.52	2,484.7	-55.9	20.3	59.4	0.33



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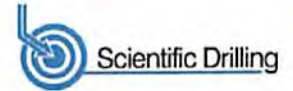
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2,512.0	0.24	131.19	2,509.7	-56.0	20.4	59.5	0.36
2,537.0	0.14	184.70	2,534.7	-56.1	20.4	59.6	0.77
2,562.0	0.13	189.02	2,559.7	-56.1	20.4	59.7	0.06
2,587.0	0.15	213.44	2,584.7	-56.2	20.4	59.7	0.25
2,612.0	0.12	214.88	2,609.7	-56.2	20.3	59.7	0.12
2,637.0	0.05	224.05	2,634.7	-56.3	20.3	59.8	0.28
2,662.0	0.01	167.25	2,659.7	-56.3	20.3	59.8	0.18
2,687.0	0.07	298.69	2,684.7	-56.3	20.3	59.8	0.31
2,712.0	0.08	321.04	2,709.7	-56.2	20.3	59.7	0.12
2,737.0	0.05	34.09	2,734.7	-56.2	20.3	59.7	0.32
2,762.0	0.09	58.32	2,759.7	-56.2	20.3	59.7	0.20
2,787.0	0.08	115.59	2,784.7	-56.2	20.3	59.7	0.33
2,812.0	0.06	214.86	2,809.7	-56.2	20.3	59.7	0.43
2,837.0	0.10	215.57	2,834.7	-56.3	20.3	59.7	0.16
2,862.0	0.10	295.32	2,859.7	-56.3	20.3	59.7	0.51
2,887.0	0.10	302.35	2,884.7	-56.2	20.2	59.7	0.05
2,912.0	0.09	353.48	2,909.7	-56.2	20.2	59.7	0.33
2,937.0	0.15	2.82	2,934.7	-56.2	20.2	59.6	0.25
2,962.0	0.13	50.59	2,959.7	-56.1	20.2	59.6	0.46
2,987.0	0.09	97.69	2,984.7	-56.1	20.3	59.6	0.38
3,012.0	0.09	171.78	3,009.7	-56.1	20.3	59.6	0.43
3,037.0	0.10	262.38	3,034.7	-56.1	20.3	59.6	0.54
3,062.0	0.04	289.73	3,059.7	-56.1	20.3	59.6	0.27
3,087.0	0.13	301.06	3,084.7	-56.1	20.2	59.6	0.36
3,112.0	0.08	305.91	3,109.7	-56.1	20.2	59.6	0.20
3,137.0	0.14	2.04	3,134.7	-56.1	20.2	59.5	0.47
3,162.0	0.09	24.76	3,159.7	-56.0	20.2	59.5	0.27
3,187.0	0.11	95.03	3,184.7	-56.0	20.2	59.5	0.47
3,212.0	0.08	189.87	3,209.7	-56.0	20.2	59.5	0.57
3,237.0	0.09	215.35	3,234.7	-56.0	20.2	59.5	0.15
3,262.0	0.05	156.23	3,259.7	-56.1	20.2	59.5	0.31
3,287.0	0.18	284.26	3,284.7	-56.1	20.2	59.5	0.86
3,312.0	0.08	12.60	3,309.7	-56.0	20.2	59.5	0.78
3,337.0	0.15	355.73	3,334.7	-56.0	20.2	59.4	0.31
3,362.0	0.15	338.42	3,359.7	-55.9	20.1	59.4	0.18
3,387.0	0.10	49.00	3,384.7	-55.9	20.1	59.3	0.60
3,412.0	0.09	111.94	3,409.7	-55.9	20.2	59.3	0.40
3,437.0	0.03	166.04	3,434.7	-55.9	20.2	59.4	0.31
3,462.0	0.05	217.16	3,459.7	-55.9	20.2	59.4	0.16
3,487.0	0.06	306.52	3,484.7	-55.9	20.2	59.4	0.31
3,512.0	0.06	16.01	3,509.7	-55.9	20.2	59.3	0.27
3,537.0	0.12	58.49	3,534.7	-55.9	20.2	59.3	0.34
3,562.0	0.11	22.80	3,559.7	-55.8	20.2	59.3	0.28
3,587.0	0.13	54.46	3,584.7	-55.8	20.3	59.3	0.27

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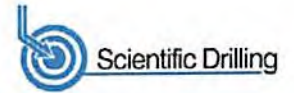
EOW Completion Report

WV Department of
Environmental Protection

Company:	Antero	Local Co-ordinate Reference:	Well Randall Unit 1H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: GL 1332' + KB 25' @ 1357.0usft
Site:	Stewart Pad	MD Reference:	Patterson 347: GL 1332' + KB 25' @ 1357.0usft
Well:	Randall 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)
3,612.0	0.13	102.97	3,609.7	-55.8	20.3	59.3	0.43
3,637.0	0.17	138.00	3,634.7	-55.8	20.4	59.3	0.39
3,662.0	0.12	160.78	3,659.7	-55.9	20.4	59.4	0.30
3,687.0	0.09	173.61	3,684.7	-55.9	20.4	59.4	0.15
3,712.0	0.07	159.79	3,709.7	-55.9	20.4	59.5	0.11
3,737.0	0.09	209.76	3,734.7	-56.0	20.4	59.5	0.28
3,762.0	0.13	270.16	3,759.7	-56.0	20.4	59.5	0.46
3,787.0	0.09	305.08	3,784.7	-56.0	20.3	59.5	0.30
3,812.0	0.15	275.52	3,809.7	-56.0	20.3	59.5	0.34
3,837.0	0.16	274.81	3,834.7	-56.0	20.2	59.4	0.04
3,862.0	0.12	293.72	3,859.7	-55.9	20.2	59.4	0.24
3,887.0	0.05	341.71	3,884.7	-55.9	20.1	59.4	0.38
3,912.0	0.10	358.70	3,909.7	-55.9	20.1	59.3	0.22
3,937.0	0.07	307.43	3,934.7	-55.9	20.1	59.3	0.31
3,962.0	0.06	319.79	3,959.7	-55.8	20.1	59.3	0.07
3,987.0	0.12	1.76	3,984.7	-55.8	20.1	59.2	0.34
4,012.0	0.07	337.36	4,009.7	-55.8	20.1	59.2	0.25
4,037.0	0.07	4.80	4,034.7	-55.7	20.1	59.2	0.13
4,062.0	0.05	23.39	4,059.7	-55.7	20.1	59.1	0.11
4,087.0	0.04	20.25	4,084.7	-55.7	20.1	59.1	0.04
4,112.0	0.06	234.60	4,109.7	-55.7	20.1	59.1	0.38
4,137.0	0.05	124.21	4,134.7	-55.7	20.1	59.1	0.36
4,162.0	0.03	266.00	4,159.7	-55.7	20.1	59.1	0.30
4,187.0	0.08	249.65	4,184.7	-55.7	20.1	59.1	0.21
4,212.0	0.12	260.66	4,209.7	-55.7	20.0	59.1	0.18
4,237.0	0.15	282.99	4,234.7	-55.7	20.0	59.1	0.24
4,262.0	0.22	303.21	4,259.7	-55.7	19.9	59.1	0.38
4,287.0	0.25	301.26	4,284.7	-55.6	19.8	59.0	0.12
4,312.0	0.22	338.06	4,309.7	-55.6	19.7	58.9	0.60
4,337.0	0.21	301.51	4,334.7	-55.5	19.7	58.8	0.54
4,362.0	0.18	308.41	4,359.7	-55.4	19.6	58.8	0.15
4,387.0	0.19	283.15	4,384.7	-55.4	19.5	58.7	0.33
4,412.0	0.10	262.30	4,409.7	-55.4	19.5	58.7	0.41
4,437.0	0.30	247.69	4,434.7	-55.4	19.4	58.7	0.82
4,462.0	0.29	238.04	4,459.7	-55.5	19.3	58.7	0.20
4,487.0	0.39	246.83	4,484.7	-55.6	19.1	58.7	0.45
4,512.0	0.42	240.96	4,509.7	-55.6	19.0	58.8	0.20
4,537.0	0.58	242.73	4,534.7	-55.7	18.8	58.8	0.64
4,562.0	0.63	249.99	4,559.7	-55.8	18.5	58.8	0.37
4,587.0	0.70	243.12	4,584.7	-56.0	18.3	58.9	0.42
4,612.0	0.63	242.97	4,609.7	-56.1	18.0	58.9	0.28
4,637.0	0.72	239.83	4,634.7	-56.2	17.8	59.0	0.39
4,662.0	0.74	240.75	4,659.7	-56.4	17.5	59.0	0.09
4,687.0	0.72	249.02	4,684.6	-56.5	17.2	59.1	0.43



Company: Antero	Local Co-ordinate Reference: Well Randall Unit 1H
Project: Doddridge County WV	TVD Reference: Patterson 347: GL 1332' + KB 25' @ 1357.0usft
Site: Stewart Pad	MD Reference: Patterson 347: GL 1332' + KB 25' @ 1357.0usft
Well: Randall Unit 1H	North Reference: Grid
Wellbore: Original Wellpath	Survey Calculation Method: Minimum Curvature
Design: As Drilled	Database: Oklahoma District

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Survey								WV Department of Environmental Protection
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	
4,712.0	0.76	246.73	4,709.6	-56.6	16.9	59.1	0.20	
4,737.0	0.79	250.38	4,734.6	-56.8	16.6	59.1	0.23	
4,762.0	0.77	240.73	4,759.6	-56.9	16.3	59.2	0.53	
4,787.0	0.77	249.97	4,784.6	-57.0	16.0	59.2	0.50	
4,812.0	0.84	247.98	4,809.6	-57.2	15.6	59.2	0.30	
4,837.0	0.86	248.71	4,834.6	-57.3	15.3	59.3	0.09	
4,862.0	0.77	250.18	4,859.6	-57.4	15.0	59.3	0.37	
4,887.0	0.82	246.25	4,884.6	-57.6	14.6	59.3	0.30	
4,912.0	0.80	247.60	4,909.6	-57.7	14.3	59.4	0.11	
4,937.0	0.80	248.51	4,934.6	-57.8	14.0	59.4	0.05	
4,962.0	0.71	248.85	4,959.6	-58.0	13.7	59.4	0.36	
4,987.0	0.78	242.84	4,984.6	-58.1	13.4	59.5	0.42	
5,012.0	0.78	239.65	5,009.6	-58.3	13.1	59.5	0.17	
5,037.0	0.84	241.20	5,034.6	-58.4	12.8	59.6	0.26	
5,062.0	0.99	239.11	5,059.6	-58.6	12.4	59.7	0.61	
5,087.0	0.96	239.12	5,084.6	-58.8	12.1	59.8	0.12	
5,112.0	0.98	241.85	5,109.6	-59.1	11.7	59.9	0.20	
5,137.0	0.93	238.35	5,134.6	-59.3	11.4	60.0	0.31	
5,162.0	0.87	243.87	5,159.6	-59.4	11.0	60.1	0.42	
5,187.0	0.80	241.88	5,184.6	-59.6	10.7	60.1	0.30	
5,212.0	0.81	248.19	5,209.6	-59.8	10.4	60.2	0.36	
5,237.0	0.69	252.32	5,234.6	-59.9	10.1	60.2	0.53	
5,262.0	0.76	257.88	5,259.6	-60.0	9.8	60.2	0.40	
5,287.0	0.62	254.55	5,284.6	-60.0	9.5	60.1	0.58	
5,312.0	0.68	245.15	5,309.6	-60.1	9.2	60.2	0.49	
5,337.0	0.67	245.06	5,334.6	-60.2	8.9	60.2	0.04	
5,362.0	0.68	243.75	5,359.6	-60.4	8.7	60.2	0.07	
5,387.0	0.68	242.94	5,384.6	-60.5	8.4	60.3	0.04	
5,412.0	0.69	241.87	5,409.6	-60.6	8.1	60.3	0.06	
5,437.0	0.71	238.93	5,434.6	-60.8	7.9	60.4	0.16	
5,462.0	0.74	236.91	5,459.6	-61.0	7.6	60.5	0.16	
5,487.0	0.74	235.62	5,484.6	-61.1	7.3	60.6	0.07	
5,512.0	0.77	232.25	5,509.6	-61.3	7.1	60.7	0.21	
5,537.0	0.84	238.28	5,534.6	-61.5	6.8	60.8	0.44	
5,562.0	0.86	245.22	5,559.6	-61.7	6.4	60.9	0.42	
5,587.0	0.81	250.76	5,584.6	-61.8	6.1	60.9	0.38	
5,612.0	0.78	252.43	5,609.6	-62.0	5.8	60.9	0.15	
5,637.0	0.66	244.40	5,634.6	-62.1	5.5	60.9	0.63	
5,662.0	0.69	258.14	5,659.6	-62.2	5.2	60.9	0.66	
5,687.0	0.65	260.12	5,684.6	-62.2	4.9	60.9	0.18	
5,712.0	0.62	254.08	5,709.6	-62.3	4.7	60.9	0.29	
5,737.0	0.65	256.99	5,734.6	-62.4	4.4	60.9	0.18	
5,762.0	0.67	256.56	5,759.6	-62.4	4.1	60.9	0.08	
5,787.0	0.66	258.12	5,784.5	-62.5	3.8	60.8	0.08	



EOW Completion Report



Company:	Antero	Local Co-ordinate Reference:	Well Randall Unit 1H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: GL 1332' + KB 25' @ 1357.0usft
Site:	Stewart Pad	MD Reference:	Patterson 347: GL 1332' + KB 25' @ 1357.0usft
Well:	Randall Unit 1H	North Reference:	Grid Office of Oil and Gas
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

OCT 30 2017

Survey								WV Department of Environmental Protection	
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)		
5,812.0	0.63	240.82	5,809.5	-62.6	3.6	60.8	0.79		
5,837.0	0.60	240.40	5,834.5	-62.7	3.3	60.9	0.12		
5,862.0	0.58	243.38	5,859.5	-62.8	3.1	61.0	0.15		
5,887.0	0.60	249.28	5,884.5	-62.9	2.9	61.0	0.26		
5,912.0	0.57	258.53	5,909.5	-63.0	2.6	61.0	0.40		
5,937.0	0.61	261.26	5,934.5	-63.0	2.4	60.9	0.20		
5,962.0	0.53	267.64	5,959.5	-63.1	2.1	60.9	0.41		
5,987.0	0.49	272.20	5,984.5	-63.1	1.9	60.8	0.23		
6,012.0	0.42	271.26	6,009.5	-63.1	1.7	60.8	0.28		
6,037.0	0.39	271.96	6,034.5	-63.1	1.5	60.7	0.12		
6,062.0	0.35	286.86	6,059.5	-63.0	1.4	60.6	0.42		
6,087.0	0.30	333.56	6,084.5	-63.0	1.3	60.5	1.05		
6,112.0	0.26	303.04	6,109.5	-62.9	1.2	60.4	0.61		
6,137.0	0.12	275.89	6,134.5	-62.8	1.1	60.4	0.65		
6,162.0	0.10	19.27	6,159.5	-62.8	1.1	60.3	0.69		
6,187.0	0.05	334.97	6,184.5	-62.8	1.1	60.3	0.29		
6,212.0	0.13	19.23	6,209.5	-62.7	1.1	60.3	0.40		
6,237.0	0.06	10.03	6,234.5	-62.7	1.1	60.2	0.29		
6,262.0	0.10	71.58	6,259.5	-62.7	1.1	60.2	0.36		
6,287.0	0.09	78.92	6,284.5	-62.7	1.2	60.2	0.06		
6,312.0	0.10	65.33	6,309.5	-62.7	1.2	60.2	0.10		
6,337.0	0.09	347.85	6,334.5	-62.6	1.2	60.2	0.48		
6,362.0	0.15	49.28	6,359.5	-62.6	1.3	60.2	0.53		
6,387.0	0.15	30.93	6,384.5	-62.5	1.3	60.1	0.19		
6,412.0	0.19	38.76	6,409.5	-62.5	1.3	60.1	0.18		
6,437.0	0.26	23.89	6,434.5	-62.4	1.4	60.0	0.36		
6,462.0	0.24	36.84	6,459.5	-62.3	1.4	60.0	0.24		
6,487.0	0.25	19.54	6,484.5	-62.2	1.5	59.9	0.30		
6,512.0	0.42	77.67	6,509.5	-62.1	1.6	59.8	1.43		
6,537.0	0.43	27.40	6,534.5	-62.0	1.7	59.8	1.44		
6,562.0	0.36	5.38	6,559.5	-61.9	1.8	59.7	0.66		
6,584.5	0.15	327.11	6,582.0	-61.8	1.8	59.6	1.16		
6,642.0	1.49	272.71	6,639.5	-61.7	1.0	59.2	2.45		
6,672.0	5.33	266.65	6,669.5	-61.7	-0.8	58.8	12.84		
6,702.0	9.53	266.29	6,699.2	-62.0	-4.7	57.9	14.00		
6,732.0	12.75	265.31	6,728.6	-62.4	-10.4	56.6	10.75		
6,762.0	15.65	261.72	6,757.7	-63.3	-17.8	55.2	10.10		
6,792.0	18.47	258.22	6,786.4	-64.8	-26.4	54.2	10.00		
6,822.0	21.36	257.28	6,814.6	-67.0	-36.4	53.3	9.69		
6,852.0	23.57	256.84	6,842.3	-69.6	-47.6	52.5	7.39		
6,882.0	25.22	255.97	6,869.6	-72.5	-59.6	51.7	5.63		
6,897.0	26.77	254.44	6,883.1	-74.2	-66.0	51.4	11.24		
Sycamore									
6,912.0	28.33	253.07	6,896.4	-76.1	-72.6	51.3	11.24		



EOW Completion Report



Company: Antero	Local Co-ordinate Reference: Well Randall Unit 1H
Project: Doddridge County WV	TVD Reference: Patterson 347: GL 1332' + KB 25' @ 1357.0usft
Site: Stewart Pad	MD Reference: Patterson 347: GL 1332' + KB 25' @ 1357.0usft
Well: Randall Unit 1H	North Reference: Grid
Wellbore: Original Wellpath	Survey Calculation Method: Minimum Curvature
Design: As Drilled	Database: Oklahoma District

OCT 30 2017

Survey

WV Department of Environmental Protection

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (%/100usft)
6,942.0	31.48	252.62	6,922.4	-80.5	-86.9	51.3	10.53
6,972.0	34.11	251.96	6,947.6	-85.5	-102.4	51.5	8.85
7,002.0	36.92	249.34	6,972.1	-91.3	-118.8	52.2	10.65
7,032.0	39.07	245.00	6,995.7	-98.4	-135.8	54.0	11.43
7,062.0	40.01	240.69	7,018.8	-107.1	-152.8	57.3	9.67
7,092.0	41.20	235.19	7,041.6	-117.5	-169.3	62.4	12.57
7,100.0	41.65	233.78	7,047.6	-120.6	-173.6	64.0	12.93
Middlesex							
7,122.0	42.97	230.04	7,063.9	-129.7	-185.3	69.3	12.93
7,152.0	44.20	224.89	7,085.6	-143.7	-200.5	78.2	12.52
7,182.0	45.10	221.48	7,107.0	-159.1	-214.9	88.6	8.53
7,212.0	46.12	218.55	7,128.0	-175.5	-228.7	100.3	7.76
7,242.0	48.12	215.06	7,148.4	-193.1	-241.9	113.2	10.82
7,272.0	50.80	211.21	7,167.9	-212.2	-254.3	127.8	13.22
7,302.0	53.57	208.18	7,186.3	-232.8	-266.0	144.0	12.20
7,314.0	54.68	207.35	7,193.3	-241.4	-270.6	150.9	10.82
Burkett							
7,332.0	56.36	206.15	7,203.5	-254.6	-277.2	161.6	10.82
7,362.0	58.61	204.52	7,219.6	-277.5	-288.1	180.2	8.79
7,370.0	59.05	203.45	7,223.8	-283.7	-290.8	185.4	12.72
Tully							
7,392.0	60.29	200.54	7,234.9	-301.4	-298.0	200.1	12.72
7,422.0	63.20	196.99	7,249.1	-326.4	-306.4	221.5	14.24
7,452.0	66.02	194.61	7,262.0	-352.4	-313.8	244.2	11.82
7,482.0	67.91	192.12	7,273.7	-379.3	-320.2	268.0	9.90
7,512.0	70.18	189.42	7,284.4	-406.8	-325.4	292.8	11.31
7,542.0	72.45	186.34	7,294.0	-435.0	-329.3	318.5	12.32
7,572.0	74.35	184.09	7,302.6	-463.6	-331.9	345.1	9.58
7,593.0	74.95	182.45	7,308.2	-483.8	-333.1	364.1	8.05
Hamilton							
7,602.0	75.21	181.75	7,310.5	-492.5	-333.4	372.3	8.05
7,632.0	76.11	179.36	7,317.9	-521.6	-333.7	400.0	8.28
7,662.0	76.83	177.28	7,324.9	-550.7	-332.8	428.1	7.16
Marcellus							
7,692.0	78.00	175.31	7,331.5	-579.9	-330.9	456.6	7.50
7,722.0	79.81	172.78	7,337.2	-609.2	-327.9	485.4	10.24
7,752.0	83.27	169.93	7,341.7	-638.5	-323.4	514.8	14.88
7,794.0	87.73	167.04	7,345.0	-679.5	-315.0	556.4	12.64
7,887.0	88.79	164.71	7,347.8	-769.7	-292.4	649.3	2.75
7,982.0	89.36	162.51	7,349.3	-860.8	-265.6	744.2	2.39
8,076.0	88.32	162.02	7,351.2	-950.3	-236.9	838.2	1.22
8,170.0	87.85	160.93	7,354.4	-1,039.4	-207.1	932.1	1.26
8,264.0	88.12	161.85	7,357.7	-1,128.4	-177.1	1,026.0	1.02
8,358.0	90.20	162.69	7,359.0	-1,217.9	-148.5	1,120.0	2.39
8,451.0	90.20	162.35	7,358.7	-1,306.6	-120.5	1,213.0	0.37



EOW Completion Report



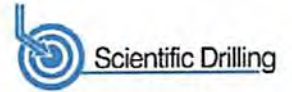
Company: Antero	Local Co-ordinate Reference: Well Randall Unit 1H
Project: Doddridge County WV	TVD Reference: Patterson 347: GL 1332' + KB 25' @ 1357.0usft
Site: Stewart Pad	MD Reference: Patterson 347: GL 1332' + KB 25' @ 1357.0usft
Well: Randall Unit 1H	North Reference: Grid
Wellbore: Original Wellpath	Survey Calculation Method: Minimum Curvature
Design: As Drilled	Database: Oklahoma District

OCT 30 2017

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	WV Department of Environmental Protection DEEP (%/100usft)
8,545.0	89.56	161.06	7,358.9	-1,395.9	-91.0	1,307.0	1.53
8,640.0	89.90	160.22	7,359.4	-1,485.5	-59.6	1,401.9	0.95
8,734.0	90.97	161.56	7,358.6	-1,574.3	-28.8	1,495.8	1.82
8,828.0	90.74	160.73	7,357.2	-1,663.3	1.6	1,589.8	0.92
8,922.0	89.93	162.33	7,356.7	-1,752.4	31.4	1,683.8	1.91
9,016.0	90.64	162.92	7,356.2	-1,842.1	59.4	1,777.8	0.98
9,110.0	90.77	162.93	7,355.1	-1,932.0	87.0	1,871.8	0.14
9,204.0	90.97	162.90	7,353.6	-2,021.8	114.7	1,965.7	0.22
9,298.0	90.87	162.72	7,352.1	-2,111.6	142.4	2,059.7	0.22
9,392.0	88.66	160.11	7,352.5	-2,200.7	172.4	2,153.7	3.64
9,486.0	88.82	159.23	7,354.6	-2,288.8	205.0	2,247.5	0.95
9,581.0	90.81	159.44	7,354.9	-2,377.7	238.6	2,342.3	2.11
9,675.0	90.54	159.11	7,353.8	-2,465.6	271.8	2,436.1	0.45
9,769.0	88.86	162.72	7,354.3	-2,554.4	302.6	2,530.1	4.24
9,864.0	88.39	162.91	7,356.6	-2,645.2	330.6	2,625.0	0.53
9,957.0	89.36	168.86	7,358.4	-2,735.3	353.3	2,717.9	6.48
10,051.0	89.33	166.80	7,359.5	-2,827.2	373.1	2,811.5	2.19
10,146.0	89.93	168.26	7,360.1	-2,919.9	393.6	2,906.2	1.66
10,241.0	89.53	168.83	7,360.5	-3,013.0	412.5	3,000.7	0.73
10,335.0	90.20	165.24	7,360.7	-3,104.6	433.6	3,094.4	3.89
10,429.0	89.83	164.37	7,360.7	-3,195.3	458.2	3,188.4	1.01
10,523.0	89.70	164.22	7,361.1	-3,285.8	483.6	3,282.3	0.21
10,617.0	89.30	165.15	7,361.9	-3,376.5	508.5	3,376.3	1.08
10,712.0	90.74	162.53	7,361.9	-3,467.7	534.9	3,471.3	3.15
10,806.0	90.10	164.28	7,361.2	-3,557.8	561.7	3,565.3	1.98
10,900.0	90.94	162.57	7,360.3	-3,647.9	588.6	3,659.2	2.03
10,994.0	90.44	161.83	7,359.2	-3,737.4	617.3	3,753.2	0.95
11,088.0	89.87	162.45	7,359.0	-3,826.8	646.1	3,847.2	0.90
11,182.0	89.76	161.71	7,359.3	-3,916.3	675.0	3,941.2	0.80
11,276.0	90.07	160.36	7,359.4	-4,005.2	705.6	4,035.2	1.47
11,371.0	89.90	159.50	7,359.4	-4,094.4	738.2	4,130.0	0.92
11,464.0	90.80	160.41	7,358.9	-4,181.8	770.1	4,222.9	1.38
11,558.0	89.83	162.59	7,358.3	-4,270.9	799.9	4,316.9	2.54
11,653.0	90.54	163.22	7,358.0	-4,361.7	827.8	4,411.9	1.00
11,747.0	90.47	163.59	7,357.2	-4,451.8	854.7	4,505.9	0.40
11,841.0	89.76	165.31	7,357.0	-4,542.3	879.9	4,599.8	1.98
11,935.0	91.27	164.04	7,356.2	-4,633.0	904.7	4,693.8	2.10
12,030.0	92.02	162.96	7,353.4	-4,724.0	931.7	4,788.7	1.38
12,124.0	92.79	162.02	7,349.5	-4,813.6	959.9	4,882.6	1.29
12,218.0	91.38	159.76	7,346.1	-4,902.4	990.7	4,976.5	2.83
12,312.0	89.77	160.97	7,345.1	-4,990.9	1,022.3	5,070.4	2.14
12,406.0	89.80	159.07	7,345.5	-5,079.2	1,054.4	5,164.3	2.02
12,500.0	88.66	161.88	7,346.8	-5,167.8	1,085.8	5,258.2	3.23
12,595.0	89.03	162.28	7,348.7	-5,258.2	1,115.0	5,353.2	0.57
12,689.0	88.59	163.08	7,350.6	-5,347.9	1,143.0	5,447.1	0.97

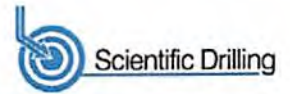


EOW Completion Report



Company: Antero	Local Co-ordinate Reference: Well Randall Unit 1H	RECEIVED Office of Oil and Gas OCT 30 2017 WV Department of Environmental Protection
Project: Doddridge County WV	TVD Reference: Patterson 347: GL 1332' + KB 25' @ 1357.0usft	
Site: Stewart Pad	MD Reference: Patterson 347: GL 1332' + KB 25' @ 1357.0usft	
Well: Randall 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)
12,783.0	90.34	165.42	7,351.5	-5,438.3	1,168.5	5,541.1	3.11
12,877.0	90.77	166.29	7,350.6	-5,529.5	1,191.5	5,635.0	1.03
12,971.0	90.24	163.84	7,349.8	-5,620.3	1,215.7	5,728.9	2.67
13,065.0	88.66	164.31	7,350.7	-5,710.7	1,241.5	5,822.9	1.75
13,159.0	88.56	163.67	7,352.9	-5,801.0	1,267.4	5,916.8	0.69
13,253.0	88.96	163.44	7,355.0	-5,891.2	1,294.0	6,010.8	0.49
13,348.0	90.20	162.12	7,355.7	-5,981.9	1,322.1	6,105.8	1.91
13,442.0	89.87	161.94	7,355.6	-6,071.3	1,351.1	6,199.8	0.40
13,536.0	89.77	162.79	7,355.9	-6,160.9	1,379.6	6,293.8	0.91
13,630.0	90.07	162.00	7,356.0	-6,250.5	1,408.0	6,387.8	0.90
13,724.0	89.43	162.28	7,356.5	-6,339.9	1,436.9	6,481.7	0.74
13,819.0	90.03	161.95	7,356.9	-6,430.4	1,466.0	6,576.7	0.72
13,913.0	90.00	160.17	7,356.9	-6,519.3	1,496.6	6,670.7	1.89
14,006.0	89.97	159.66	7,356.9	-6,606.6	1,528.5	6,763.6	0.55
14,101.0	90.33	162.08	7,356.7	-6,696.4	1,559.6	6,858.5	2.58
14,195.0	89.87	162.62	7,356.5	-6,785.9	1,588.1	6,952.5	0.75
14,289.0	90.10	162.88	7,356.5	-6,875.7	1,616.0	7,046.5	0.37
14,383.0	90.17	163.25	7,356.3	-6,965.6	1,643.4	7,140.5	0.40
14,477.0	91.45	162.94	7,355.0	-7,055.6	1,670.7	7,234.5	1.40
14,571.0	90.94	163.93	7,353.0	-7,145.6	1,697.5	7,328.5	1.18
14,665.0	90.87	163.17	7,351.5	-7,235.8	1,724.1	7,422.4	0.81
14,759.0	90.44	161.63	7,350.4	-7,325.4	1,752.5	7,516.4	1.70
14,854.0	88.79	160.63	7,351.1	-7,415.2	1,783.3	7,611.4	2.03
14,948.0	90.00	161.70	7,352.1	-7,504.2	1,813.6	7,705.3	1.72
15,042.0	90.30	161.87	7,351.8	-7,593.5	1,843.0	7,799.3	0.37
15,136.0	89.53	165.11	7,352.0	-7,683.6	1,869.7	7,893.3	3.54
15,230.0	89.90	164.99	7,352.4	-7,774.4	1,893.9	7,987.2	0.41
15,324.0	90.17	165.15	7,352.4	-7,865.3	1,918.2	8,081.1	0.33
15,418.0	90.13	164.49	7,352.1	-7,956.0	1,942.8	8,175.1	0.70
15,512.0	89.63	165.85	7,352.3	-8,046.8	1,966.8	8,269.0	1.54
15,606.0	90.61	165.15	7,352.1	-8,137.8	1,990.4	8,362.9	1.28
15,700.0	90.98	163.57	7,350.8	-8,228.3	2,015.7	8,456.9	1.73
15,795.0	90.74	164.38	7,349.4	-8,319.6	2,041.9	8,551.8	0.89
15,887.0	90.30	162.05	7,348.6	-8,407.7	2,068.5	8,643.8	2.58
15,978.0	89.97	162.94	7,348.3	-8,494.5	2,095.9	8,734.8	1.04
16,070.0	90.27	162.81	7,348.2	-8,582.4	2,123.0	8,826.8	0.36
16,162.0	90.24	163.23	7,347.7	-8,670.4	2,149.8	8,918.8	0.46
16,254.0	89.70	160.45	7,347.8	-8,757.8	2,178.5	9,010.8	3.08
16,345.0	90.10	160.28	7,348.0	-8,843.5	2,209.1	9,101.7	0.48
16,437.0	89.56	161.50	7,348.2	-8,930.5	2,239.2	9,193.7	1.45
16,529.0	89.80	161.78	7,348.7	-9,017.8	2,268.2	9,285.6	0.40
16,621.0	89.93	161.15	7,349.0	-9,105.0	2,297.4	9,377.6	0.70
16,712.0	89.56	162.23	7,349.4	-9,191.4	2,326.0	9,468.6	1.25
16,804.0	89.26	163.99	7,350.3	-9,279.4	2,352.7	9,560.6	1.94



Company:	Antero	Local Co-ordinate Reference:	Well Randall Unit 1H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: GL 1332' + KB 25' @ 1357.0usft
Site:	Stewart Pad	MD Reference:	Patterson 347: GL 1332' + KB 25' @ 1357.0usft
Well:	Randall 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)
16,895.0	90.64	162.63	7,350.4	-9,366.6	2,378.9	9,651.6	2.13
16,990.0	90.60	163.52	7,349.4	-9,457.5	2,406.5	9,746.6	0.94
17,084.0	90.67	163.78	7,348.3	-9,547.6	2,433.0	9,840.5	0.29
17,178.0	88.55	162.93	7,349.0	-9,637.7	2,459.9	9,934.5	2.43
17,272.0	90.40	161.86	7,349.8	-9,727.3	2,488.3	10,028.5	2.27
17,366.0	90.00	163.02	7,349.5	-9,816.9	2,516.7	10,122.5	1.31
17,460.0	90.57	159.89	7,349.0	-9,906.0	2,546.6	10,216.5	3.38
17,554.0	89.73	161.73	7,348.8	-9,994.8	2,577.5	10,310.4	2.15
17,648.0	89.19	162.25	7,349.7	-10,084.2	2,606.5	10,404.4	0.80
17,742.0	90.07	163.67	7,350.3	-10,174.0	2,634.1	10,498.4	1.78
17,836.0	90.23	161.36	7,350.0	-10,263.7	2,662.3	10,592.4	2.46
17,931.0	90.57	161.53	7,349.4	-10,353.8	2,692.6	10,687.3	0.40
18,025.0	90.50	163.39	7,348.5	-10,443.4	2,720.9	10,781.3	1.98
18,119.0	90.47	163.46	7,347.7	-10,533.5	2,747.7	10,875.3	0.08
18,213.0	90.34	163.40	7,347.0	-10,623.6	2,774.5	10,969.3	0.15
18,307.0	90.34	164.30	7,346.5	-10,713.8	2,800.6	11,063.3	0.96
18,401.0	90.37	164.24	7,345.9	-10,804.3	2,826.1	11,157.3	0.07
18,495.0	90.17	162.64	7,345.4	-10,894.4	2,852.9	11,251.3	1.72
18,589.0	90.03	161.29	7,345.3	-10,983.8	2,882.0	11,345.3	1.44
18,684.0	89.36	162.63	7,345.8	-11,074.1	2,911.4	11,440.2	1.58
18,778.0	90.17	164.66	7,346.2	-11,164.3	2,937.9	11,534.2	2.33
18,872.0	90.47	163.68	7,345.6	-11,254.7	2,963.5	11,628.2	1.09
18,966.0	91.00	163.40	7,344.4	-11,344.9	2,990.2	11,722.2	0.64
19,060.0	90.87	163.03	7,342.9	-11,434.9	3,017.3	11,816.2	0.42
19,094.0	90.97	161.75	7,342.4	-11,467.3	3,027.6	11,850.2	3.78
19,152.0	90.97	161.75	7,341.4	-11,522.3	3,045.8	11,908.1	0.00

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
6,897.0	6,883.1	-74.2	-66.0	Sycamore
7,100.0	7,047.6	-120.6	-173.6	Middlesex
7,314.0	7,193.3	-241.4	-270.6	Burkett
7,370.0	7,223.8	-283.7	-290.8	Tully
7,593.0	7,308.2	-483.8	-333.1	Hamilton
7,662.0	7,324.9	-550.7	-332.8	Marcellus

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Environmental Protection

Checked By: _____ Approved By: _____ Date: _____