



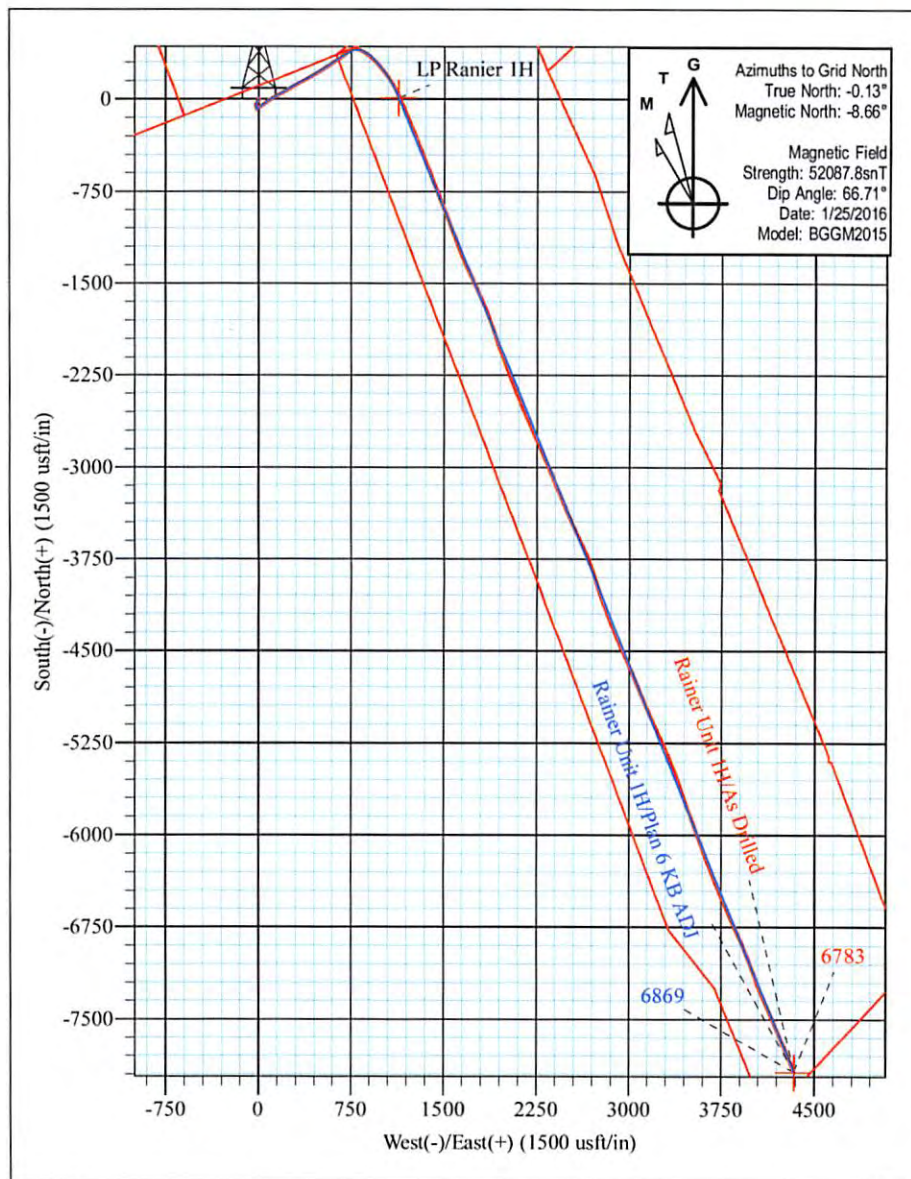
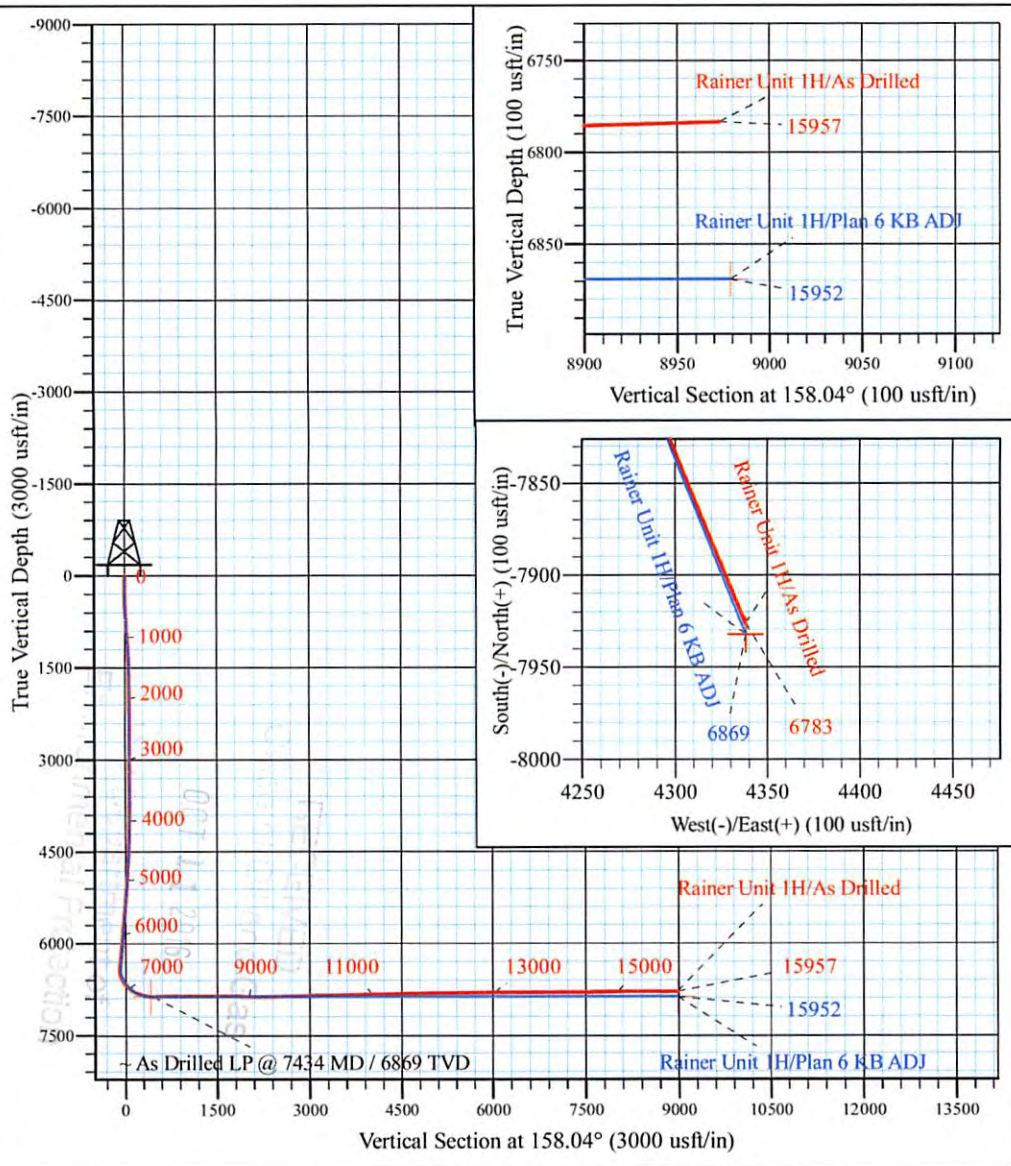
Cofor Pad: Outback Morton Nova Grape Rainer
 Rainer Unit 1H
 Plan 6 KB ADJ
 Patterson 347: 1189' GL + 25' KB @ 1214.0usft
 Doddridge County WV

PROJECT DETAILS:
 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



WELL DETAILS: **Rainer Unit 1H SHL**

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	14270954.11	1696927.53	39° 17' 57.286 N	80° 48' 0.880 W



Rainer Unit 1H
Approx. BHL
 39° 16' 38.819 N 80° 47' 5.913 W

Shane Rhodes
 8:30, February 10 2016
 Scientific Drilling International
 124 Vista Drive
 Charleroi, PA 15022



Antero Resources

**Doddridge County WV
Cofor Pad: Outback Morton Nova Grape Rainer
Rainer Unit 1H**

Original Wellpath

Design: As Drilled

Standard Survey Report

10 February, 2016



www.scientificdrilling.com

12/09/2016



Company:	Antero Resources	Local Co-ordinate Reference:	Well Rainer Unit 1H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: 1189' GL + 25' KB @ 1214.0usft
Site:	Cofor Pad: Outback Morton Nova Grape Rainer	MD Reference:	Patterson 347: 1189' GL + 25' KB @ 1214.0usft
Well:	Rainer Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

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	Cofor Pad: Outback Morton Nova Grape Rainer, Site Center: Outback Unit 1H				
Site Position:		Northing:	14,271,032.41 usft	Latitude:	39° 17' 58.061 N
From:	Map	Easting:	1,696,909.68 usft	Longitude:	80° 48' 1.105 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.13 °

Well	Rainer Unit 1H, Confor Pad					
Well Position	+N/-S	0.0 usft	Northing:	14,270,954.11 usft	Latitude:	39° 17' 57.286 N
	+E/-W	0.0 usft	Easting:	1,696,927.53 usft	Longitude:	80° 48' 0.880 W
Position Uncertainty		2.0 usft	Wellhead Elevation:	1,214.0 usft	Ground Level:	1,189.0 usft

Wellbore	Original Wellpath				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2015	11/2/2015	-8.52	66.73	52,115
	BGGM2015	1/25/2016	-8.53	66.71	52,088

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	158.04	

Survey Program	Date 2/10/2016			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
110.9	6,291.0	Survey #8 Final Def Gyro (Original Wellpa	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4
6,376.0	15,957.0	Survey #9 - SDI MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
110.8	0.43	188.11	110.8	-0.4	-0.1	0.4	0.39	0.39	0.00	
112.0	0.42	189.32	112.0	-0.4	-0.1	0.4	1.17	-0.87	105.22	
137.0	0.34	222.21	137.0	-0.6	-0.1	0.5	0.91	-0.32	131.56	
162.0	0.33	198.84	162.0	-0.7	-0.2	0.6	0.54	-0.04	-93.48	
187.0	0.28	203.57	187.0	-0.8	-0.2	0.7	0.22	-0.20	18.92	
212.0	0.18	207.11	212.0	-0.9	-0.3	0.7	0.40	-0.40	14.16	
237.0	0.14	164.65	237.0	-1.0	-0.3	0.8	0.49	-0.16	-169.84	
262.0	0.13	179.45	262.0	-1.0	-0.3	0.8	0.14	-0.04	59.20	



Company:	Antero Resources	Local Co-ordinate Reference:	Well Rainer Unit 1H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: 1189' GL + 25' KB @ 1214.0usft
Site:	Cofor Pad: Outback Morton Nova Grape Rainer	MD Reference:	Patterson 347: 1189' GL + 25' KB @ 1214.0usft
Well:	Rainer Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
287.0	0.12	215.05	287.0	-1.1	-0.3	0.9	0.31	-0.04	142.40
312.0	0.11	194.63	312.0	-1.1	-0.3	0.9	0.17	-0.04	-81.68
337.0	0.18	191.63	337.0	-1.2	-0.3	1.0	0.28	0.28	-12.00
362.0	0.22	206.06	362.0	-1.3	-0.4	1.0	0.26	0.16	57.72
387.0	0.70	203.92	387.0	-1.4	-0.5	1.2	1.92	1.92	-8.56
412.0	1.50	205.89	412.0	-1.9	-0.7	1.5	3.20	3.20	7.88
437.0	2.61	203.82	437.0	-2.7	-1.0	2.1	4.45	4.44	-8.28
462.0	3.52	201.95	461.9	-3.9	-1.5	3.1	3.66	3.64	-7.48
487.0	4.21	202.35	486.9	-5.5	-2.2	4.3	2.76	2.76	1.60
512.0	4.51	203.26	511.8	-7.2	-2.9	5.6	1.23	1.20	3.64
537.0	4.86	204.07	536.7	-9.1	-3.7	7.1	1.42	1.40	3.24
562.0	5.39	203.66	561.6	-11.2	-4.6	8.6	2.13	2.12	-1.64
587.0	5.73	205.73	586.5	-13.4	-5.7	10.3	1.58	1.36	8.28
612.0	6.10	212.08	611.4	-15.6	-6.9	11.9	3.00	1.48	25.40
637.0	6.45	215.95	636.2	-17.9	-8.4	13.4	2.20	1.40	15.48
662.0	6.77	218.42	661.1	-20.2	-10.2	14.9	1.71	1.28	9.88
687.0	6.82	218.65	685.9	-22.5	-12.0	16.3	0.23	0.20	0.92
712.0	6.82	218.13	710.7	-24.8	-13.9	17.8	0.25	0.00	-2.08
737.0	6.88	218.14	735.5	-27.1	-15.7	19.3	0.24	0.24	0.04
762.0	6.83	218.85	760.3	-29.5	-17.6	20.8	0.39	-0.20	2.84
787.0	6.51	219.76	785.2	-31.7	-19.4	22.2	1.35	-1.28	3.64
812.0	5.17	220.25	810.1	-33.7	-21.0	23.4	5.36	-5.36	1.96
837.0	4.75	216.98	835.0	-35.4	-22.4	24.4	2.02	-1.68	-13.08
862.0	4.63	206.73	859.9	-37.1	-23.5	25.6	3.38	-0.48	-41.00
887.0	4.71	198.11	884.8	-39.0	-24.2	27.1	2.82	0.32	-34.48
912.0	4.93	188.09	909.7	-41.0	-24.7	28.8	3.48	0.88	-40.08
937.0	5.07	181.44	934.6	-43.2	-24.9	30.7	2.38	0.56	-26.60
962.0	5.17	175.77	959.5	-45.4	-24.8	32.8	2.06	0.40	-22.68
987.0	5.32	171.09	984.4	-47.7	-24.6	35.0	1.81	0.60	-18.72
1,012.0	5.46	167.05	1,009.3	-50.0	-24.1	37.3	1.62	0.56	-16.16
1,037.0	5.39	166.86	1,034.2	-52.3	-23.6	39.7	0.29	-0.28	-0.76
1,062.0	5.20	166.20	1,059.1	-54.5	-23.0	41.9	0.80	-0.76	-2.64
1,087.0	4.96	165.63	1,084.0	-56.7	-22.5	44.1	0.98	-0.96	-2.28
1,112.0	4.58	165.17	1,108.9	-58.7	-22.0	46.2	1.53	-1.52	-1.84
1,137.0	4.30	164.72	1,133.8	-60.5	-21.5	48.1	1.13	-1.12	-1.80
1,162.0	4.01	163.48	1,158.7	-62.3	-21.0	49.9	1.21	-1.16	-4.96
1,187.0	3.64	163.03	1,183.7	-63.9	-20.5	51.6	1.48	-1.48	-1.80
1,212.0	3.40	162.78	1,208.6	-65.4	-20.1	53.1	0.96	-0.96	-1.00
1,237.0	3.24	161.57	1,233.6	-66.7	-19.6	54.6	0.70	-0.64	-4.84
1,262.0	3.03	160.35	1,258.6	-68.0	-19.2	55.9	0.88	-0.84	-4.88
1,287.0	2.70	159.48	1,283.5	-69.2	-18.7	57.2	1.33	-1.32	-3.48
1,312.0	2.48	160.63	1,308.5	-70.3	-18.4	58.3	0.90	-0.88	4.60
1,337.0	2.25	161.16	1,333.5	-71.2	-18.0	59.3	0.92	-0.92	2.12

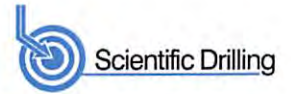


Scientific Drilling International
Survey Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Rainer Unit 1H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: 1189' GL + 25' KB @ 1214.0usft
Site:	Cofor Pad: Outback Morton Nova Grape Rainer	MD Reference:	Patterson 347: 1189' GL + 25' KB @ 1214.0usft
Well:	Rainer Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
1,362.0	1.98	161.03	1,358.5	-72.1	-17.7	60.3	1.08	-1.08	-0.52	
1,387.0	1.80	158.29	1,383.5	-72.9	-17.4	61.1	0.81	-0.72	-10.96	
1,412.0	1.66	156.36	1,408.4	-73.6	-17.1	61.8	0.61	-0.56	-7.72	
1,437.0	1.51	159.07	1,433.4	-74.2	-16.9	62.5	0.67	-0.60	10.84	
1,462.0	1.38	158.95	1,458.4	-74.8	-16.6	63.2	0.52	-0.52	-0.48	
1,487.0	1.29	156.33	1,483.4	-75.3	-16.4	63.7	0.43	-0.36	-10.48	
1,512.0	1.16	158.94	1,508.4	-75.8	-16.2	64.3	0.57	-0.52	10.44	
1,537.0	1.03	163.74	1,533.4	-76.3	-16.1	64.7	0.64	-0.52	19.20	
1,562.0	0.79	152.63	1,558.4	-76.7	-15.9	65.1	1.19	-0.96	-44.44	
1,587.0	0.89	167.05	1,583.4	-77.0	-15.8	65.5	0.93	0.40	57.68	
1,612.0	0.80	163.11	1,608.4	-77.4	-15.7	65.9	0.43	-0.36	-15.76	
1,637.0	0.70	161.00	1,633.4	-77.7	-15.6	66.2	0.41	-0.40	-8.44	
1,662.0	0.60	161.93	1,658.4	-77.9	-15.5	66.5	0.40	-0.40	3.72	
1,687.0	0.58	157.75	1,683.4	-78.2	-15.4	66.7	0.19	-0.08	-16.72	
1,712.0	0.60	160.65	1,708.4	-78.4	-15.3	67.0	0.14	0.08	11.60	
1,737.0	0.56	153.30	1,733.4	-78.7	-15.2	67.2	0.34	-0.16	-29.40	
1,762.0	0.51	159.60	1,758.4	-78.9	-15.1	67.5	0.31	-0.20	25.20	
1,787.0	0.46	143.10	1,783.4	-79.0	-15.0	67.7	0.59	-0.20	-66.00	
1,812.0	0.52	153.26	1,808.4	-79.2	-14.9	67.9	0.42	0.24	40.64	
1,837.0	0.55	150.05	1,833.4	-79.4	-14.8	68.1	0.17	0.12	-12.84	
1,862.0	0.53	157.74	1,858.4	-79.6	-14.7	68.4	0.30	-0.08	30.76	
1,887.0	0.55	160.12	1,883.4	-79.9	-14.6	68.6	0.12	0.08	9.52	
1,912.0	0.47	146.81	1,908.4	-80.1	-14.5	68.8	0.57	-0.32	-53.24	
1,937.0	0.49	143.25	1,933.4	-80.2	-14.4	69.0	0.14	0.08	-14.24	
1,962.0	0.50	151.72	1,958.4	-80.4	-14.3	69.2	0.30	0.04	33.88	
1,987.0	0.52	148.36	1,983.4	-80.6	-14.2	69.5	0.14	0.08	-13.44	
2,012.0	0.53	152.40	2,008.4	-80.8	-14.1	69.7	0.15	0.04	16.16	
2,037.0	0.50	147.84	2,033.4	-81.0	-14.0	69.9	0.20	-0.12	-18.24	
2,062.0	0.50	150.29	2,058.4	-81.2	-13.9	70.1	0.09	0.00	9.80	
2,087.0	0.45	140.90	2,083.4	-81.4	-13.7	70.3	0.37	-0.20	-37.56	
2,112.0	0.44	147.55	2,108.4	-81.5	-13.6	70.5	0.21	-0.04	26.60	
2,137.0	0.45	132.52	2,133.4	-81.7	-13.5	70.7	0.47	0.04	-60.12	
2,162.0	0.48	143.93	2,158.4	-81.8	-13.4	70.9	0.39	0.12	45.64	
2,187.0	0.46	139.07	2,183.4	-82.0	-13.2	71.1	0.18	-0.08	-19.44	
2,212.0	0.39	141.89	2,208.4	-82.1	-13.1	71.3	0.29	-0.28	11.28	
2,237.0	0.38	125.66	2,233.4	-82.2	-13.0	71.4	0.44	-0.04	-64.92	
2,262.0	0.35	153.41	2,258.4	-82.4	-12.9	71.6	0.71	-0.12	111.00	
2,287.0	0.40	130.22	2,283.4	-82.5	-12.8	71.7	0.63	0.20	-92.76	
2,312.0	0.28	143.50	2,308.4	-82.6	-12.7	71.8	0.57	-0.48	53.12	
2,337.0	0.25	125.11	2,333.4	-82.7	-12.6	71.9	0.36	-0.12	-73.56	
2,362.0	0.17	138.41	2,358.4	-82.7	-12.5	72.0	0.37	-0.32	53.20	
2,387.0	0.16	143.19	2,383.4	-82.8	-12.5	72.1	0.07	-0.04	19.12	
2,412.0	0.12	137.22	2,408.4	-82.8	-12.5	72.2	0.17	-0.16	-23.88	



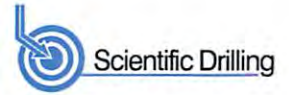
Company:	Antero Resources	Local Co-ordinate Reference:	Well Rainer Unit 1H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: 1189' GL + 25' KB @ 1214.0usft
Site:	Cofor Pad: Outback Morton Nova Grape Rainer	MD Reference:	Patterson 347: 1189' GL + 25' KB @ 1214.0usft
Well:	Rainer Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,437.0	0.06	98.49	2,433.4	-82.8	-12.4	72.2	0.33	-0.24	-154.92
2,462.0	0.09	168.89	2,458.4	-82.9	-12.4	72.2	0.36	0.12	281.60
2,487.0	0.07	162.40	2,483.4	-82.9	-12.4	72.2	0.09	-0.08	-25.96
2,512.0	0.01	86.57	2,508.4	-82.9	-12.4	72.3	0.27	-0.24	-303.32
2,537.0	0.04	261.34	2,533.4	-82.9	-12.4	72.3	0.20	0.12	699.08
2,562.0	0.06	291.43	2,558.4	-82.9	-12.4	72.3	0.13	0.08	120.36
2,587.0	0.09	234.99	2,583.4	-82.9	-12.5	72.2	0.30	0.12	-225.76
2,612.0	0.10	17.28	2,608.4	-82.9	-12.5	72.2	0.72	0.04	569.16
2,637.0	0.09	312.76	2,633.4	-82.9	-12.5	72.2	0.41	-0.04	-258.08
2,662.0	0.06	333.52	2,658.4	-82.9	-12.5	72.2	0.16	-0.12	83.04
2,687.0	0.11	318.56	2,683.4	-82.8	-12.5	72.1	0.22	0.20	-59.84
2,712.0	0.11	300.52	2,708.4	-82.8	-12.6	72.1	0.14	0.00	-72.16
2,737.0	0.15	285.33	2,733.4	-82.8	-12.6	72.1	0.21	0.16	-60.76
2,762.0	0.08	275.78	2,758.4	-82.8	-12.7	72.0	0.29	-0.28	-38.20
2,787.0	0.18	280.24	2,783.4	-82.8	-12.7	72.0	0.40	0.40	17.84
2,812.0	0.16	278.97	2,808.4	-82.7	-12.8	72.0	0.08	-0.08	-5.08
2,837.0	0.23	283.45	2,833.4	-82.7	-12.9	71.9	0.29	0.28	17.92
2,862.0	0.19	293.36	2,858.4	-82.7	-13.0	71.9	0.22	-0.16	39.64
2,887.0	0.24	296.45	2,883.4	-82.7	-13.0	71.8	0.21	0.20	12.36
2,912.0	0.20	280.87	2,908.4	-82.6	-13.1	71.7	0.29	-0.16	-62.32
2,937.0	0.22	288.36	2,933.4	-82.6	-13.2	71.7	0.14	0.08	29.96
2,962.0	0.24	298.11	2,958.4	-82.6	-13.3	71.6	0.18	0.08	39.00
2,987.0	0.27	311.38	2,983.4	-82.5	-13.4	71.5	0.26	0.12	53.08
3,012.0	0.24	308.74	3,008.4	-82.4	-13.5	71.4	0.13	-0.12	-10.56
3,037.0	0.26	302.47	3,033.4	-82.4	-13.6	71.3	0.14	0.08	-25.08
3,062.0	0.22	312.65	3,058.4	-82.3	-13.7	71.2	0.23	-0.16	40.72
3,087.0	0.23	265.17	3,083.4	-82.3	-13.7	71.2	0.73	0.04	-189.92
3,112.0	0.25	292.23	3,108.4	-82.3	-13.8	71.1	0.46	0.08	108.24
3,137.0	0.30	297.95	3,133.4	-82.2	-14.0	71.0	0.23	0.20	22.88
3,162.0	0.32	306.87	3,158.4	-82.1	-14.1	70.9	0.21	0.08	35.68
3,187.0	0.21	301.06	3,183.4	-82.1	-14.2	70.8	0.45	-0.44	-23.24
3,212.0	0.21	317.43	3,208.4	-82.0	-14.2	70.7	0.24	0.00	65.48
3,237.0	0.21	299.20	3,233.4	-82.0	-14.3	70.7	0.27	0.00	-72.92
3,262.0	0.15	297.80	3,258.4	-81.9	-14.4	70.6	0.24	-0.24	-5.60
3,287.0	0.17	299.90	3,283.4	-81.9	-14.4	70.5	0.08	0.08	8.40
3,312.0	0.15	287.57	3,308.4	-81.9	-14.5	70.5	0.16	-0.08	-49.32
3,337.0	0.10	279.80	3,333.4	-81.8	-14.5	70.5	0.21	-0.20	-31.08
3,362.0	0.14	282.97	3,358.4	-81.8	-14.6	70.4	0.16	0.16	12.68
3,387.0	0.14	291.65	3,383.4	-81.8	-14.7	70.4	0.08	0.00	34.72
3,412.0	0.13	316.81	3,408.4	-81.8	-14.7	70.3	0.24	-0.04	100.64
3,437.0	0.14	301.25	3,433.4	-81.7	-14.7	70.3	0.15	0.04	-62.24
3,462.0	0.20	301.78	3,458.4	-81.7	-14.8	70.2	0.24	0.24	2.12
3,487.0	0.20	297.98	3,483.4	-81.7	-14.9	70.2	0.05	0.00	-15.20
3,512.0	0.17	306.96	3,508.4	-81.6	-15.0	70.1	0.17	-0.12	35.92



Scientific Drilling International
Survey Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Rainer Unit 1H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: 1189' GL + 25' KB @ 1214.0usft
Site:	Cofor Pad: Outback Morton Nova Grape Rainer	MD Reference:	Patterson 347: 1189' GL + 25' KB @ 1214.0usft
Well:	Rainer Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,537.0	0.14	313.99	3,533.4	-81.6	-15.0	70.0	0.14	-0.12	28.12
3,562.0	0.20	301.09	3,558.4	-81.5	-15.1	70.0	0.28	0.24	-51.60
3,587.0	0.19	297.05	3,583.4	-81.5	-15.1	69.9	0.07	-0.04	-16.16
3,612.0	0.14	294.68	3,608.4	-81.5	-15.2	69.9	0.20	-0.20	-9.48
3,637.0	0.19	318.83	3,633.4	-81.4	-15.3	69.8	0.34	0.20	96.60
3,662.0	0.19	297.00	3,658.4	-81.4	-15.3	69.7	0.29	0.00	-87.32
3,687.0	0.12	352.13	3,683.4	-81.3	-15.4	69.7	0.63	-0.28	220.52
3,712.0	0.13	302.19	3,708.4	-81.3	-15.4	69.6	0.42	0.04	-199.76
3,737.0	0.11	300.75	3,733.4	-81.2	-15.4	69.6	0.08	-0.08	-5.76
3,762.0	0.17	267.02	3,758.4	-81.2	-15.5	69.5	0.40	0.24	-134.92
3,787.0	0.21	315.23	3,783.4	-81.2	-15.6	69.5	0.64	0.16	192.84
3,812.0	0.11	281.98	3,808.4	-81.2	-15.6	69.4	0.53	-0.40	-133.00
3,837.0	0.25	272.72	3,833.4	-81.2	-15.7	69.4	0.57	0.56	-37.04
3,862.0	0.21	279.37	3,858.4	-81.2	-15.8	69.4	0.19	-0.16	26.60
3,887.0	0.23	267.75	3,883.4	-81.1	-15.9	69.3	0.20	0.08	-46.48
3,912.0	0.16	258.84	3,908.4	-81.2	-16.0	69.3	0.30	-0.28	-35.64
3,937.0	0.27	258.25	3,933.4	-81.2	-16.1	69.3	0.44	0.44	-2.36
3,962.0	0.21	267.98	3,958.4	-81.2	-16.2	69.2	0.29	-0.24	38.92
3,987.0	0.17	283.65	3,983.4	-81.2	-16.3	69.2	0.26	-0.16	62.68
4,012.0	0.16	23.82	4,008.4	-81.1	-16.3	69.2	1.01	-0.04	400.68
4,037.0	1.62	59.70	4,033.4	-80.9	-16.0	69.1	5.97	5.84	143.52
4,062.0	3.12	62.29	4,058.3	-80.4	-15.1	69.0	6.01	6.00	10.36
4,087.0	4.30	58.38	4,083.3	-79.6	-13.7	68.7	4.82	4.72	-15.64
4,112.0	4.69	56.94	4,108.2	-78.6	-12.0	68.4	1.62	1.56	-5.76
4,137.0	5.08	55.02	4,133.1	-77.4	-10.2	67.9	1.69	1.56	-7.68
4,162.0	5.93	53.69	4,158.0	-76.0	-8.3	67.4	3.44	3.40	-5.32
4,187.0	5.99	54.01	4,182.9	-74.5	-6.2	66.7	0.27	0.24	1.28
4,212.0	6.77	53.79	4,207.7	-72.8	-3.9	66.1	3.12	3.12	-0.88
4,237.0	7.50	53.58	4,232.5	-71.0	-1.4	65.3	2.92	2.92	-0.84
4,262.0	8.29	53.66	4,257.3	-68.9	1.3	64.4	3.16	3.16	0.32
4,287.0	9.27	53.45	4,282.0	-66.7	4.4	63.5	3.92	3.92	-0.84
4,312.0	9.29	53.26	4,306.7	-64.3	7.6	62.5	0.15	0.08	-0.76
4,337.0	9.50	53.06	4,331.3	-61.8	10.9	61.4	0.85	0.84	-0.80
4,362.0	9.48	53.14	4,356.0	-59.3	14.2	60.3	0.10	-0.08	0.32
4,387.0	9.77	53.35	4,380.6	-56.8	17.5	59.3	1.17	1.16	0.84
4,412.0	10.58	53.03	4,405.2	-54.2	21.1	58.1	3.25	3.24	-1.28
4,437.0	11.09	53.02	4,429.8	-51.4	24.8	56.9	2.04	2.04	-0.04
4,462.0	11.77	53.35	4,454.3	-48.4	28.8	55.7	2.73	2.72	1.32
4,487.0	12.23	53.51	4,478.8	-45.3	33.0	54.3	1.84	1.84	0.64
4,512.0	12.81	53.52	4,503.2	-42.1	37.3	53.0	2.32	2.32	0.04
4,537.0	13.28	53.55	4,527.5	-38.7	41.9	51.6	1.88	1.88	0.12
4,562.0	13.47	53.63	4,551.8	-35.3	46.5	50.1	0.76	0.76	0.32
4,587.0	13.69	53.61	4,576.1	-31.8	51.2	48.7	0.88	0.88	-0.08



Company:	Antero Resources	Local Co-ordinate Reference:	Well Rainer Unit 1H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: 1189' GL + 25' KB @ 1214.0usft
Site:	Cofor Pad: Outback Morton Nova Grape Rainer	MD Reference:	Patterson 347: 1189' GL + 25' KB @ 1214.0usft
Well:	Rainer Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

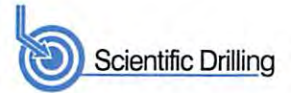
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,612.0	13.88	53.60	4,600.4	-28.3	56.0	47.2	0.76	0.76	-0.04
4,637.0	14.37	53.64	4,624.7	-24.7	61.0	45.7	1.96	1.96	0.16
4,662.0	14.80	53.90	4,648.9	-20.9	66.0	44.1	1.74	1.72	1.04
4,687.0	15.63	54.26	4,673.0	-17.1	71.3	42.5	3.34	3.32	1.44
4,712.0	16.38	54.58	4,697.0	-13.1	76.9	40.9	3.02	3.00	1.28
4,737.0	17.04	55.38	4,721.0	-9.0	82.8	39.3	2.80	2.64	3.20
4,762.0	17.22	55.82	4,744.8	-4.8	88.9	37.7	0.89	0.72	1.76
4,787.0	18.44	58.01	4,768.6	-0.6	95.3	36.2	5.57	4.88	8.76
4,812.0	19.49	59.41	4,792.3	3.6	102.3	34.9	4.58	4.20	5.60
4,837.0	20.15	60.05	4,815.8	7.9	109.6	33.7	2.78	2.64	2.56
4,862.0	20.73	61.08	4,839.2	12.2	117.2	32.6	2.73	2.32	4.12
4,887.0	20.97	61.24	4,862.6	16.4	125.0	31.5	0.99	0.96	0.64
4,912.0	21.53	60.73	4,885.9	20.8	132.9	30.4	2.36	2.24	-2.04
4,937.0	22.13	60.35	4,909.1	25.4	141.0	29.2	2.47	2.40	-1.52
4,962.0	22.77	60.13	4,932.2	30.2	149.3	27.9	2.58	2.56	-0.88
4,987.0	23.05	60.20	4,955.2	35.0	157.7	26.5	1.13	1.12	0.28
5,012.0	23.78	60.03	4,978.2	39.9	166.4	25.2	2.93	2.92	-0.68
5,037.0	24.62	60.10	5,001.0	45.1	175.2	23.7	3.36	3.36	0.28
5,062.0	25.35	60.36	5,023.6	50.3	184.4	22.3	2.95	2.92	1.04
5,087.0	25.58	60.15	5,046.2	55.6	193.7	20.9	0.99	0.92	-0.84
5,112.0	26.01	60.25	5,068.7	61.0	203.2	19.4	1.73	1.72	0.40
5,137.0	26.24	60.17	5,091.2	66.5	212.7	17.9	0.93	0.92	-0.32
5,162.0	26.63	59.95	5,113.6	72.1	222.4	16.3	1.61	1.56	-0.88
5,187.0	26.93	59.66	5,135.9	77.7	232.1	14.7	1.31	1.20	-1.16
5,212.0	27.37	59.13	5,158.1	83.5	241.9	13.0	2.01	1.76	-2.12
5,237.0	27.62	58.88	5,180.3	89.5	251.8	11.2	1.10	1.00	-1.00
5,262.0	28.00	58.98	5,202.4	95.5	261.8	9.3	1.53	1.52	0.40
5,287.0	28.37	58.88	5,224.4	101.6	271.9	7.5	1.49	1.48	-0.40
5,312.0	28.71	59.06	5,246.4	107.7	282.2	5.6	1.40	1.36	0.72
5,337.0	28.45	59.33	5,268.4	113.9	292.4	3.7	1.16	-1.04	1.08
5,362.0	28.75	59.55	5,290.3	120.0	302.7	2.0	1.27	1.20	0.88
5,387.0	28.42	58.94	5,312.3	126.1	313.0	0.1	1.76	-1.32	-2.44
5,412.0	28.64	58.66	5,334.2	132.3	323.2	-1.8	1.03	0.88	-1.12
5,437.0	28.68	59.09	5,356.2	138.5	333.5	-3.7	0.84	0.16	1.72
5,462.0	28.53	59.92	5,378.1	144.5	343.8	-5.5	1.70	-0.60	3.32
5,487.0	28.38	60.16	5,400.1	150.5	354.1	-7.1	0.75	-0.60	0.96
5,512.0	28.24	60.03	5,422.1	156.4	364.4	-8.8	0.61	-0.56	-0.52
5,537.0	28.42	60.55	5,444.1	162.3	374.7	-10.4	1.22	0.72	2.08
5,562.0	27.62	61.68	5,466.2	167.9	385.0	-11.8	3.84	-3.20	4.52
5,587.0	27.44	61.92	5,488.3	173.4	395.2	-13.0	0.85	-0.72	0.96
5,612.0	27.21	61.27	5,510.6	178.9	405.3	-14.3	1.51	-0.92	-2.60
5,637.0	26.94	60.71	5,532.8	184.4	415.2	-15.7	1.49	-1.08	-2.24
5,662.0	26.54	60.06	5,555.1	189.9	425.0	-17.2	1.98	-1.60	-2.60



Company:	Antero Resources	Local Co-ordinate Reference:	Well Rainer Unit 1H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: 1189' GL + 25' KB @ 1214.0usft
Site:	Cofor Pad: Outback Morton Nova Grape Rainer	MD Reference:	Patterson 347: 1189' GL + 25' KB @ 1214.0usft
Well:	Rainer Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
5,687.0	26.18	59.26	5,577.5	195.5	434.6	-18.8	2.02	-1.44	-3.20	
5,712.0	25.80	58.45	5,600.0	201.2	444.0	-20.6	2.08	-1.52	-3.24	
5,737.0	25.35	57.82	5,622.6	206.9	453.1	-22.5	2.10	-1.80	-2.52	
5,762.0	25.08	57.11	5,645.2	212.6	462.1	-24.4	1.62	-1.08	-2.84	
5,787.0	24.59	56.47	5,667.9	218.4	470.9	-26.5	2.24	-1.96	-2.56	
5,812.0	24.31	56.48	5,690.6	224.1	479.5	-28.5	1.12	-1.12	0.04	
5,837.0	24.82	57.41	5,713.4	229.8	488.2	-30.5	2.56	2.04	3.72	
5,862.0	24.73	58.03	5,736.1	235.4	497.1	-32.4	1.10	-0.36	2.48	
5,887.0	25.43	58.80	5,758.7	240.9	506.1	-34.2	3.09	2.80	3.08	
5,912.0	25.33	59.63	5,781.3	246.4	515.3	-35.8	1.48	-0.40	3.32	
5,937.0	25.95	59.80	5,803.8	251.9	524.7	-37.4	2.50	2.48	0.68	
5,962.0	25.65	60.22	5,826.3	257.3	534.1	-38.9	1.41	-1.20	1.68	
5,987.0	25.41	59.85	5,848.9	262.7	543.4	-40.4	1.15	-0.96	-1.48	
6,012.0	24.77	58.88	5,871.5	268.1	552.5	-42.0	3.04	-2.56	-3.88	
6,037.0	24.20	57.43	5,894.3	273.5	561.3	-43.8	3.31	-2.28	-5.80	
6,062.0	23.52	56.15	5,917.2	279.1	569.8	-45.8	3.42	-2.72	-5.12	
6,087.0	22.14	54.76	5,940.2	284.6	577.8	-47.9	5.93	-5.52	-5.56	
6,112.0	22.54	53.96	5,963.3	290.1	585.5	-50.1	2.01	1.60	-3.20	
6,137.0	22.01	53.93	5,986.5	295.7	593.2	-52.4	2.12	-2.12	-0.12	
6,162.0	22.80	54.84	6,009.6	301.2	600.9	-54.7	3.45	3.16	3.64	
6,187.0	23.07	56.23	6,032.6	306.8	608.9	-56.8	2.42	1.08	5.56	
6,212.0	23.88	57.43	6,055.5	312.2	617.3	-58.7	3.76	3.24	4.80	
6,237.0	24.83	58.61	6,078.3	317.7	626.0	-60.5	4.27	3.80	4.72	
6,262.0	24.98	58.87	6,101.0	323.1	635.0	-62.2	0.74	0.60	1.04	
6,287.0	24.92	59.22	6,123.6	328.5	644.1	-63.8	0.64	-0.24	1.40	
6,291.0	25.02	59.17	6,127.3	329.4	645.5	-64.1	2.56	2.50	-1.25	
Last SDI Gyro @ 6291										
6,376.0	24.25	56.71	6,204.5	348.2	675.5	-70.3	1.51	-0.91	-2.89	
First SDI MWD @ 6376										
6,470.0	22.55	51.11	6,290.8	370.1	705.7	-79.4	2.98	-1.81	-5.96	
6,532.0	21.27	48.71	6,348.3	385.0	723.4	-86.5	2.52	-2.06	-3.87	
6,564.0	23.32	51.78	6,377.9	392.8	732.8	-90.2	7.37	6.41	9.59	
6,595.0	24.87	60.37	6,406.2	399.8	743.3	-92.8	12.36	5.00	27.71	
6,627.0	25.47	71.46	6,435.2	405.3	755.6	-93.3	14.84	1.88	34.66	
6,658.0	26.32	80.22	6,463.1	408.6	768.7	-91.5	12.63	2.74	28.26	
6,689.0	27.04	90.40	6,490.8	409.7	782.6	-87.3	14.91	2.32	32.84	
6,721.0	28.22	99.29	6,519.2	408.4	797.3	-80.6	13.39	3.69	27.78	
6,752.0	30.02	105.99	6,546.3	405.1	812.0	-72.1	12.01	5.81	21.61	
6,783.0	32.43	112.30	6,572.8	399.8	827.1	-61.5	13.10	7.77	20.35	
6,815.0	34.43	116.74	6,599.5	392.5	843.2	-48.7	9.87	6.25	13.88	
6,845.0	36.92	121.01	6,623.9	384.0	858.5	-35.1	11.74	8.31	14.22	
Middlesex @ 6845										
6,846.0	37.01	121.14	6,624.7	383.7	859.0	-34.6	11.74	8.56	13.35	
6,877.0	40.23	124.47	6,648.9	373.2	875.2	-18.8	12.36	10.39	10.74	



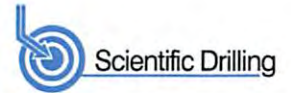
Company:	Antero Resources	Local Co-ordinate Reference:	Well Rainer Unit 1H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: 1189' GL + 25' KB @ 1214.0usft
Site:	Cofor Pad: Outback Morton Nova Grape Rainer	MD Reference:	Patterson 347: 1189' GL + 25' KB @ 1214.0usft
Well:	Rainer Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
6,908.0	43.62	128.51	6,672.0	360.9	891.9	-1.2	13.97	10.94	13.03	
6,940.0	47.04	131.34	6,694.5	346.3	909.3	18.9	12.40	10.69	8.84	
6,971.0	49.99	133.66	6,715.0	330.6	926.4	39.8	11.04	9.52	7.48	
7,002.0	52.25	135.46	6,734.4	313.6	943.6	62.0	8.58	7.29	5.81	
7,034.0	54.90	136.80	6,753.4	295.1	961.4	85.9	8.94	8.28	4.19	
Burket @ 7034										
7,065.0	57.84	138.97	6,770.6	275.9	978.7	110.1	11.13	9.48	7.00	
7,087.0	60.77	140.82	6,781.8	261.5	990.9	128.1	15.13	13.30	8.39	
Tully @ 7087										
7,096.0	61.97	141.54	6,786.2	255.3	995.9	135.6	15.13	13.38	8.05	
7,127.0	65.78	143.32	6,799.8	233.3	1,012.8	162.4	13.33	12.29	5.74	
7,158.0	67.94	144.98	6,812.0	210.1	1,029.5	190.1	8.53	6.97	5.35	
7,190.0	69.52	145.54	6,823.6	185.6	1,046.5	219.2	5.20	4.94	1.75	
7,201.0	70.60	146.16	6,827.3	177.1	1,052.3	229.3	11.18	9.85	5.61	
Marcellus @ 7201										
7,221.0	72.58	147.26	6,833.7	161.2	1,062.7	247.9	11.18	9.88	5.51	
7,252.0	74.82	149.19	6,842.4	135.9	1,078.4	277.2	9.38	7.23	6.23	
7,284.0	76.26	151.33	6,850.4	109.0	1,093.8	307.9	7.89	4.50	6.69	
7,315.0	78.69	152.83	6,857.1	82.3	1,107.9	338.0	9.15	7.84	4.84	
7,346.0	80.86	153.98	6,862.6	55.0	1,121.6	368.4	7.89	7.00	3.71	
7,377.0	84.09	155.60	6,866.6	27.2	1,134.7	399.1	11.64	10.42	5.23	
7,434.0	91.21	157.32	6,869.0	-25.0	1,157.4	456.0	12.85	12.49	3.02	
~ As Drilled LP @ 7434 MD / 6869 TVD										
7,528.0	93.15	156.27	6,865.4	-111.3	1,194.4	549.9	2.35	2.06	-1.12	
7,622.0	92.65	157.55	6,860.6	-197.7	1,231.2	643.7	1.46	-0.53	1.36	
7,716.0	89.97	158.76	6,858.5	-284.9	1,266.2	737.7	3.13	-2.85	1.29	
7,810.0	89.23	159.40	6,859.2	-372.7	1,299.8	831.7	1.04	-0.79	0.68	
7,903.0	88.66	158.23	6,860.9	-459.4	1,333.4	924.7	1.40	-0.61	-1.26	
7,997.0	90.07	159.16	6,861.9	-546.9	1,367.5	1,018.6	1.80	1.50	0.99	
8,091.0	90.20	158.03	6,861.7	-634.5	1,401.8	1,112.6	1.21	0.14	-1.20	
8,185.0	89.63	159.37	6,861.8	-722.0	1,436.0	1,206.6	1.55	-0.61	1.43	
8,279.0	90.57	160.18	6,861.7	-810.2	1,468.4	1,300.6	1.32	1.00	0.86	
8,373.0	89.97	159.49	6,861.2	-898.5	1,500.9	1,394.5	0.97	-0.64	-0.73	
8,466.0	88.99	158.76	6,862.1	-985.4	1,534.0	1,487.5	1.31	-1.05	-0.78	
8,560.0	89.26	158.68	6,863.5	-1,072.9	1,568.1	1,581.5	0.30	0.29	-0.09	
8,654.0	92.01	160.37	6,862.5	-1,161.0	1,601.0	1,675.4	3.43	2.93	1.80	
8,747.0	89.30	158.48	6,861.4	-1,248.0	1,633.7	1,768.4	3.55	-2.91	-2.03	
8,841.0	87.88	156.82	6,863.7	-1,334.9	1,669.4	1,862.4	2.32	-1.51	-1.77	
8,935.0	87.15	155.20	6,867.8	-1,420.7	1,707.6	1,956.2	1.89	-0.78	-1.72	
9,029.0	89.66	156.72	6,870.4	-1,506.5	1,745.8	2,050.1	3.12	2.67	1.62	
9,123.0	89.23	155.00	6,871.3	-1,592.3	1,784.3	2,144.0	1.89	-0.46	-1.83	
9,216.0	90.54	156.64	6,871.5	-1,677.1	1,822.4	2,237.0	2.26	1.41	1.76	
9,310.0	91.31	160.29	6,870.0	-1,764.6	1,856.9	2,330.9	3.97	0.82	3.88	
9,404.0	90.97	161.35	6,868.1	-1,853.3	1,887.7	2,424.8	1.18	-0.36	1.13	



Company:	Antero Resources	Local Co-ordinate Reference:	Well Rainer Unit 1H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: 1189' GL + 25' KB @ 1214.0usft
Site:	Cofor Pad: Outback Morton Nova Grape Rainer	MD Reference:	Patterson 347: 1189' GL + 25' KB @ 1214.0usft
Well:	Rainer Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

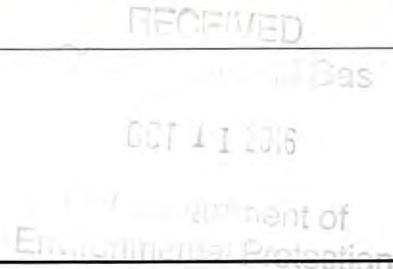
Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
9,498.0	91.74	161.33	6,865.9	-1,942.4	1,917.8	2,518.6	0.82	0.82	-0.02	
9,591.0	90.23	159.96	6,864.3	-2,030.1	1,948.6	2,611.5	2.19	-1.62	-1.47	
9,686.0	91.85	161.03	6,862.6	-2,119.6	1,980.3	2,706.4	2.04	1.71	1.13	
9,780.0	89.33	158.11	6,861.6	-2,207.7	2,013.1	2,800.3	4.10	-2.68	-3.11	
9,874.0	91.31	159.17	6,861.1	-2,295.2	2,047.4	2,894.3	2.39	2.11	1.13	
9,968.0	92.72	159.22	6,857.8	-2,383.0	2,080.7	2,988.2	1.50	1.50	0.05	
10,062.0	91.01	156.88	6,854.7	-2,470.2	2,115.9	3,082.2	3.08	-1.82	-2.49	
10,156.0	90.91	157.30	6,853.1	-2,556.7	2,152.4	3,176.1	0.46	-0.11	0.45	
10,250.0	92.05	155.94	6,850.7	-2,643.0	2,189.7	3,270.1	1.89	1.21	-1.45	
10,345.0	93.02	154.94	6,846.5	-2,729.3	2,229.2	3,364.9	1.47	1.02	-1.05	
10,439.0	91.85	157.21	6,842.5	-2,815.1	2,267.3	3,458.7	2.71	-1.24	2.41	
10,533.0	91.54	156.98	6,839.7	-2,901.7	2,303.8	3,552.7	0.41	-0.33	-0.24	
10,627.0	91.58	156.96	6,837.2	-2,988.2	2,340.6	3,646.6	0.05	0.04	-0.02	
10,721.0	91.24	159.06	6,834.9	-3,075.3	2,375.8	3,740.6	2.26	-0.36	2.23	
10,815.0	89.50	156.62	6,834.2	-3,162.3	2,411.2	3,834.6	3.19	-1.85	-2.60	
10,909.0	90.91	157.78	6,833.9	-3,249.0	2,447.6	3,928.6	1.94	1.50	1.23	
11,004.0	92.31	158.64	6,831.2	-3,337.2	2,482.9	4,023.5	1.73	1.47	0.91	
11,098.0	90.64	155.95	6,828.8	-3,423.8	2,519.2	4,117.5	3.37	-1.78	-2.86	
11,192.0	90.30	154.40	6,828.0	-3,509.1	2,558.6	4,211.4	1.69	-0.36	-1.65	
11,286.0	91.07	156.68	6,826.9	-3,594.7	2,597.5	4,305.3	2.56	0.82	2.43	
11,380.0	91.41	155.40	6,824.9	-3,680.6	2,635.7	4,399.2	1.41	0.36	-1.36	
11,474.0	91.54	158.60	6,822.5	-3,767.1	2,672.4	4,493.1	3.41	0.14	3.40	
11,568.0	90.74	161.45	6,820.6	-3,855.4	2,704.5	4,587.0	3.15	-0.85	3.03	
11,662.0	91.71	164.51	6,818.6	-3,945.2	2,732.0	4,680.7	3.41	1.03	3.26	
11,756.0	90.03	159.74	6,817.2	-4,034.7	2,760.9	4,774.4	5.38	-1.79	-5.07	
11,850.0	90.17	158.34	6,817.0	-4,122.4	2,794.5	4,868.4	1.50	0.15	-1.49	
11,945.0	91.11	159.30	6,815.9	-4,211.0	2,828.8	4,963.3	1.41	0.99	1.01	
12,039.0	91.64	159.31	6,813.7	-4,298.9	2,862.0	5,057.3	0.56	0.56	0.01	
12,133.0	90.57	157.17	6,811.9	-4,386.2	2,896.9	5,151.3	2.54	-1.14	-2.28	
12,227.0	91.01	157.32	6,810.6	-4,472.9	2,933.2	5,245.2	0.49	0.47	0.16	
12,321.0	90.67	154.39	6,809.2	-4,558.6	2,971.7	5,339.2	3.14	-0.36	-3.12	
12,415.0	91.54	157.44	6,807.4	-4,644.4	3,010.0	5,433.1	3.37	0.93	3.24	
12,509.0	91.74	156.83	6,804.7	-4,731.0	3,046.5	5,527.0	0.68	0.21	-0.65	
12,603.0	90.67	158.09	6,802.7	-4,817.8	3,082.5	5,621.0	1.76	-1.14	1.34	
12,698.0	90.30	157.03	6,801.9	-4,905.6	3,118.8	5,716.0	1.18	-0.39	-1.12	
12,792.0	90.23	156.49	6,801.5	-4,992.0	3,155.9	5,809.9	0.58	-0.07	-0.57	
12,886.0	90.07	156.48	6,801.2	-5,078.2	3,193.4	5,903.9	0.17	-0.17	-0.01	
12,980.0	88.19	153.57	6,802.7	-5,163.3	3,233.1	5,997.8	3.69	-2.00	-3.10	
13,074.0	90.84	156.29	6,803.4	-5,248.5	3,272.9	6,091.6	4.04	2.82	2.89	
13,169.0	90.67	155.28	6,802.2	-5,335.1	3,311.9	6,186.5	0.18	-0.18	-1.06	
13,263.0	91.81	160.91	6,800.2	-5,422.3	3,346.9	6,280.5	6.11	1.21	5.99	
13,357.0	90.87	158.77	6,798.0	-5,510.5	3,379.3	6,374.4	2.49	-1.00	-2.28	
13,451.0	89.77	161.05	6,797.4	-5,598.7	3,411.6	6,468.3	2.69	-1.17	2.43	
13,545.0	89.77	160.79	6,797.8	-5,687.6	3,442.3	6,562.2	0.28	0.00	-0.28	



Company:	Antero Resources	Local Co-ordinate Reference:	Well Rainer Unit 1H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: 1189' GL + 25' KB @ 1214.0usft
Site:	Cofor Pad: Outback Morton Nova Grape Rainer	MD Reference:	Patterson 347: 1189' GL + 25' KB @ 1214.0usft
Well:	Rainer Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,639.0	90.40	159.76	6,797.7	-5,776.1	3,474.0	6,656.1	1.28	0.67	-1.10
13,734.0	90.97	159.70	6,796.5	-5,865.2	3,506.9	6,751.1	0.60	0.60	-0.06
13,828.0	89.03	158.47	6,796.5	-5,953.0	3,540.5	6,845.1	2.44	-2.06	-1.31
13,921.0	89.50	160.50	6,797.7	-6,040.1	3,573.1	6,938.0	2.24	0.51	2.18
14,016.0	90.17	160.19	6,798.0	-6,129.5	3,605.0	7,032.9	0.78	0.71	-0.33
14,110.0	90.60	159.35	6,797.4	-6,217.7	3,637.5	7,126.9	1.00	0.46	-0.89
14,203.0	91.21	158.59	6,795.9	-6,304.5	3,670.9	7,219.9	1.05	0.66	-0.82
14,297.0	89.87	158.76	6,795.0	-6,392.1	3,705.1	7,313.8	1.44	-1.43	0.18
14,391.0	89.97	156.95	6,795.2	-6,479.1	3,740.5	7,407.8	1.93	0.11	-1.93
14,486.0	90.74	156.76	6,794.6	-6,566.5	3,777.9	7,502.8	0.83	0.81	-0.20
14,580.0	91.01	155.53	6,793.1	-6,652.4	3,815.9	7,596.8	1.34	0.29	-1.31
14,674.0	90.40	157.18	6,792.0	-6,738.5	3,853.6	7,690.7	1.87	-0.65	1.76
14,768.0	90.87	155.43	6,790.9	-6,824.6	3,891.3	7,784.7	1.93	0.50	-1.86
14,862.0	90.67	158.36	6,789.7	-6,911.1	3,928.2	7,878.6	3.12	-0.21	3.12
14,956.0	91.01	158.44	6,788.3	-6,998.4	3,962.8	7,972.6	0.37	0.36	0.09
15,050.0	90.54	159.67	6,787.0	-7,086.2	3,996.4	8,066.6	1.40	-0.50	1.31
15,145.0	91.85	161.47	6,785.0	-7,175.8	4,028.0	8,161.5	2.34	1.38	1.89
15,239.0	89.77	156.74	6,783.7	-7,263.6	4,061.5	8,255.4	5.50	-2.21	-5.03
15,333.0	89.20	155.87	6,784.6	-7,349.6	4,099.3	8,349.4	1.11	-0.61	-0.93
15,427.0	89.93	157.54	6,785.3	-7,436.0	4,136.5	8,443.3	1.94	0.78	1.78
15,521.0	90.47	157.19	6,784.9	-7,522.7	4,172.6	8,537.3	0.68	0.57	-0.37
15,615.0	88.76	157.70	6,785.6	-7,609.5	4,208.7	8,631.3	1.90	-1.82	0.54
15,709.0	89.16	157.30	6,787.3	-7,696.4	4,244.7	8,725.3	0.60	0.43	-0.43
15,803.0	91.01	158.42	6,787.1	-7,783.4	4,280.1	8,819.3	2.30	1.97	1.19
15,898.0	91.54	157.50	6,785.0	-7,871.5	4,315.7	8,914.3	1.12	0.56	-0.97
Last SDI MWD @ 15898									
15,957.0	91.54	157.50	6,783.4	-7,925.9	4,338.3	8,973.2	0.00	0.00	0.00
Projection To Bit @ 15957 MD / 6783 TVD									

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
As Drilled LP	0.00	0.00	6,869.0	-25.0	1,157.4	14,270,929.14	1,698,084.93	39° 17' 57.014 N	80° 47' 46.152 W
- hit/miss target									
- Shape									
- actual wellpath hits target center									
- Point									





Company:	Antero Resources	Local Co-ordinate Reference:	Well Rainer Unit 1H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: 1189' GL + 25' KB @ 1214.0usft
Site:	Cofor Pad: Outback Morton Nova Grape Rainer	MD Reference:	Patterson 347: 1189' GL + 25' KB @ 1214.0usft
Well:	Rainer Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
6,845.0	6,623.9	Middlesex @ 6845		0.00		
7,034.0	6,753.4	Burket @ 7034		0.00		
7,087.0	6,781.8	Tully @ 7087		0.00		
7,201.0	6,827.3	Marcellus @ 7201		0.00		

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
6,291.0	6,127.3	329.4	645.5	Last SDI Gyro @ 6291	
6,376.0	6,204.5	348.2	675.5	First SDI MWD @ 6376	
7,434.0	6,869.0	-25.0	1,157.4	~ As Drilled LP @ 7434 MD / 6869 TVD	
15,898.0	6,785.0	-7,871.5	4,315.7	Last SDI MWD @ 15898	
15,957.0	6,783.4	-7,925.9	4,338.3	Projection To Bit @ 15957 MD / 6783 TVD	

Checked By: _____ Approved By: _____ Date: _____