



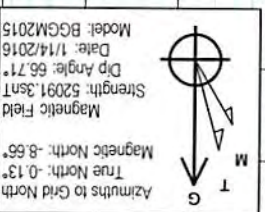
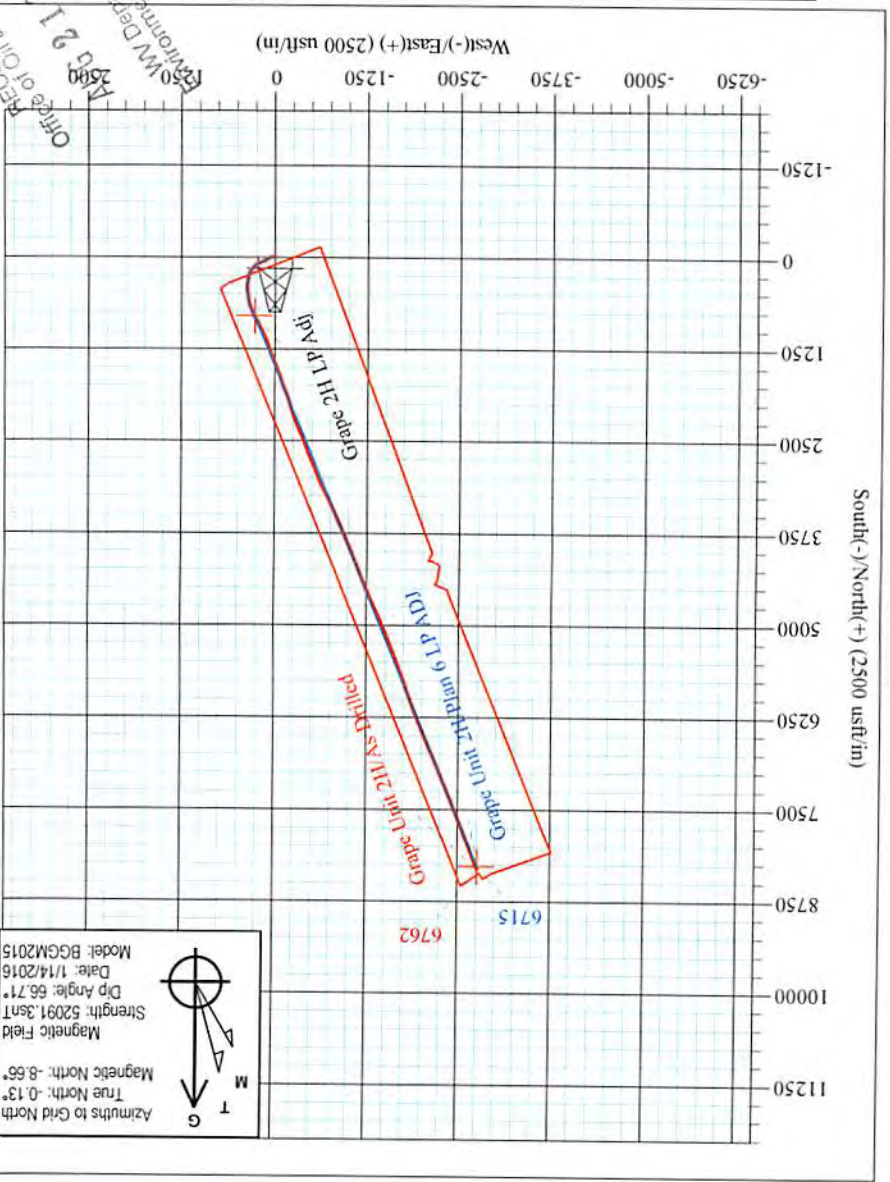
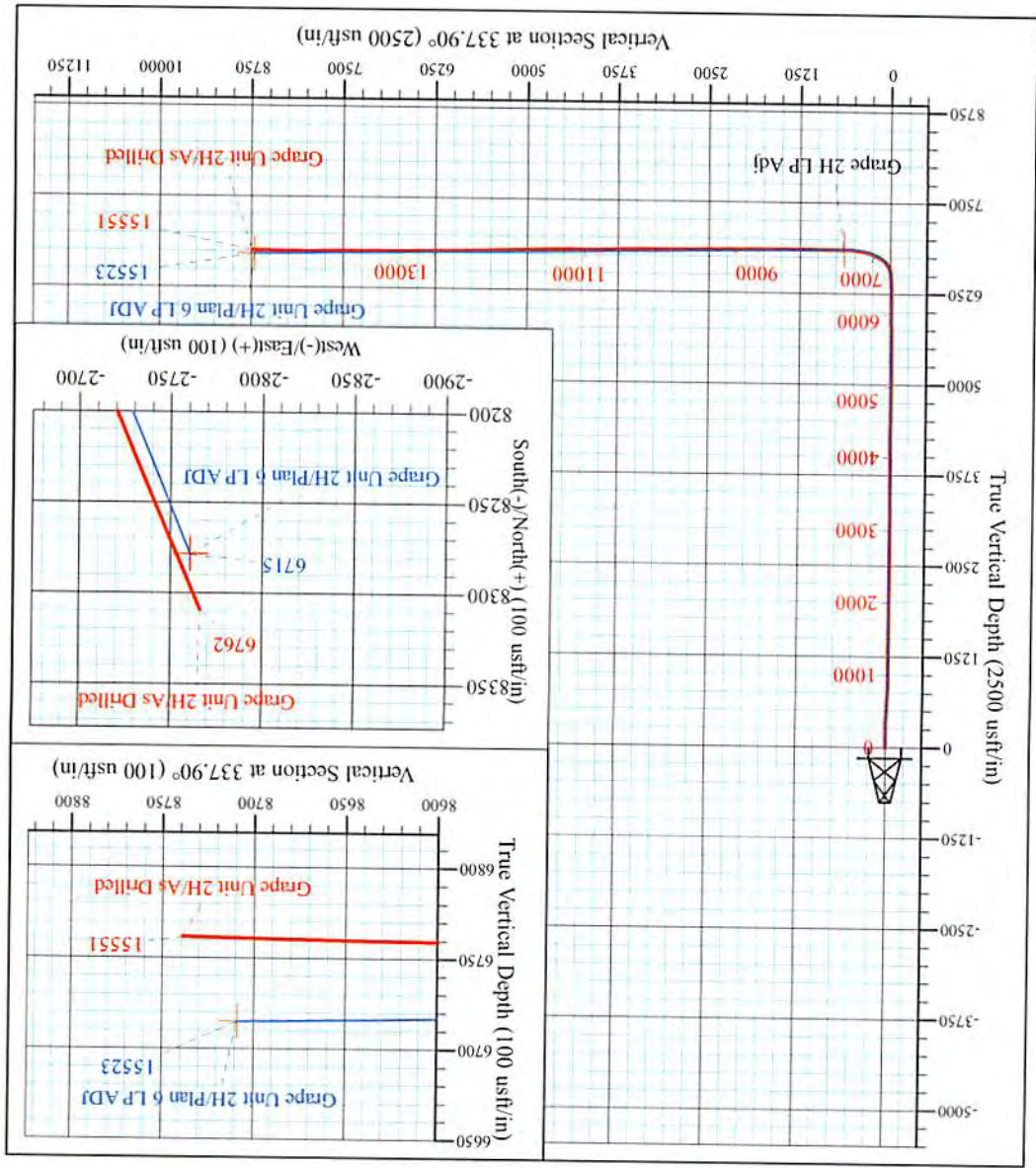
Color Pad: Outback Morton Nova Grape Rainier
 Grape Unit 2H
 Plan 6 LP ADJ
 Patterson 347: 1189' GL + 25' KB @ 1214.0usft
 Doddridge County WV

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: Grape Unit 2H SHL

+N/-S	0.0	+E/-W	0.0	Northing	14270963.86	Lasting	1696925.35	Latitude	39° 17' 57.382 N	Longitude	80° 48' 0.907 W
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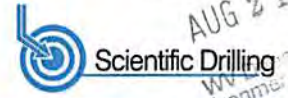
Grape Unit 2H
 Approx. BHL
 39° 19' 19.569 N 80° 48' 35.886 W

Shane Rhodes
 12:25, January 27 2016
 Scientific Drilling International
 124 Vista Drive
 Charter, PA 15022

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Survey Report



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Environmental Division

Company:	Antero Resources	Local Co-ordinate Reference:	Well Grape Unit 2H
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:	Grape Unit 2H	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	Grape Unit 2H, Marcellus					
Well Position	+N/-S	0.0 usft	Northing:	14,270,963.86 usft	Latitude:	39° 17' 57.382 N
	+E/-W	0.0 usft	Easting:	1,696,925.35 usft	Longitude:	80° 48' 0.907 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	10/28/2015	-8.52	66.73	52,116
	BGGM2015	1/14/2016	-8.53	66.71	52,091

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	337.90	

Survey Program	Date 1/27/2016				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
110.9	5,941.0	Survey #5 Final Def Gyro (Original Wellpa	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4	
6,001.0	15,551.0	Survey #6 - 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	
110.9	0.58	145.17	110.9	-0.5	0.3	-0.5	0.52	0.52	0.00	
112.0	0.58	145.51	112.0	-0.5	0.3	-0.6	0.31	0.00	30.36	
137.0	0.50	153.53	137.0	-0.7	0.4	-0.8	0.44	-0.32	32.08	
162.0	0.39	150.84	162.0	-0.8	0.5	-1.0	0.45	-0.44	-10.76	
187.0	0.41	163.95	187.0	-1.0	0.6	-1.2	0.37	0.08	52.44	
212.0	0.42	173.45	212.0	-1.2	0.6	-1.3	0.28	0.04	38.00	
237.0	0.33	159.15	237.0	-1.3	0.7	-1.5	0.52	-0.36	-57.20	
262.0	0.30	163.38	262.0	-1.5	0.7	-1.6	0.15	-0.12	16.92	



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Survey Report

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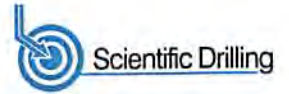
Company:	Antero Resources	Local Co-ordinate Reference:	Well Grape Unit 2H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: 1189' GL + 25' KB @ 1214.0usft
Site:	Cofor Pad: Outback Morton Nova Grape Rainer	MD Reference:	Patterson 347: 1189' GL + 25' KB @ 1214.0usft
Well:	Grape Unit 2H	North Reference:	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)
287.0	0.28	168.29	287.0	-1.6	0.8	-1.8	0.13	-0.08	19.64
312.0	0.28	165.28	312.0	-1.7	0.8	-1.9	0.06	0.00	-12.04
337.0	0.25	151.13	337.0	-1.8	0.8	-2.0	0.29	-0.12	-56.60
362.0	0.27	138.32	362.0	-1.9	0.9	-2.1	0.25	0.08	-51.24
387.0	0.59	115.50	387.0	-2.0	1.0	-2.3	1.43	1.28	-91.28
412.0	1.27	109.78	412.0	-2.2	1.4	-2.5	2.74	2.72	-22.88
437.0	2.07	112.27	437.0	-2.4	2.1	-3.0	3.21	3.20	9.96
462.0	2.46	109.27	462.0	-2.8	3.0	-3.7	1.63	1.56	-12.00
487.0	3.26	97.97	486.9	-3.0	4.2	-4.4	3.90	3.20	-45.20
512.0	3.92	92.69	511.9	-3.2	5.8	-5.1	2.95	2.64	-21.12
537.0	4.75	90.63	536.8	-3.2	7.7	-5.9	3.38	3.32	-8.24
562.0	5.41	91.37	561.7	-3.3	9.9	-6.8	2.65	2.64	2.96
587.0	6.36	91.94	586.6	-3.4	12.5	-7.8	3.81	3.80	2.28
612.0	6.61	91.47	611.4	-3.4	15.3	-8.9	1.02	1.00	-1.88
637.0	6.82	91.61	636.2	-3.5	18.2	-10.1	0.84	0.84	0.56
662.0	7.10	91.70	661.1	-3.6	21.2	-11.3	1.12	1.12	0.36
687.0	7.22	91.50	685.9	-3.7	24.3	-12.6	0.49	0.48	-0.80
712.0	7.24	91.70	710.7	-3.8	27.5	-13.8	0.13	0.08	0.80
737.0	7.30	91.33	735.5	-3.9	30.6	-15.1	0.30	0.24	-1.48
762.0	7.29	89.41	760.3	-3.9	33.8	-16.3	0.98	-0.04	-7.68
787.0	7.29	88.62	785.1	-3.8	37.0	-17.5	0.40	0.00	-3.16
812.0	7.20	86.22	809.9	-3.7	40.1	-18.5	1.26	-0.36	-9.60
837.0	7.11	84.62	834.7	-3.4	43.2	-19.5	0.87	-0.36	-6.40
862.0	7.30	79.38	859.5	-3.0	46.3	-20.2	2.74	0.76	-20.96
887.0	7.36	78.91	884.3	-2.4	49.5	-20.8	0.34	0.24	-1.88
912.0	7.34	78.02	909.1	-1.8	52.6	-21.4	0.46	-0.08	-3.56
937.0	7.29	74.81	933.9	-1.0	55.7	-21.9	1.65	-0.20	-12.84
962.0	7.10	69.59	958.7	-0.1	58.7	-22.1	2.72	-0.76	-20.88
987.0	7.04	68.37	983.5	1.0	61.6	-22.2	0.65	-0.24	-4.88
1,012.0	6.75	66.49	1,008.3	2.2	64.3	-22.2	1.47	-1.16	-7.52
1,037.0	6.57	65.08	1,033.1	3.4	67.0	-22.1	0.97	-0.72	-5.64
1,062.0	6.24	64.70	1,058.0	4.6	69.5	-21.9	1.33	-1.32	-1.52
1,087.0	6.06	64.56	1,082.8	5.7	71.9	-21.8	0.72	-0.72	-0.56
1,112.0	5.97	65.39	1,107.7	6.8	74.3	-21.6	0.50	-0.36	3.32
1,137.0	5.78	64.80	1,132.6	7.9	76.6	-21.5	0.80	-0.76	-2.36
1,162.0	5.37	63.86	1,157.4	9.0	78.8	-21.4	1.68	-1.64	-3.76
1,187.0	5.06	64.65	1,182.3	9.9	80.8	-21.2	1.27	-1.24	3.16
1,212.0	5.00	65.18	1,207.2	10.9	82.8	-21.1	0.30	-0.24	2.12
1,237.0	5.02	65.92	1,232.1	11.8	84.8	-21.0	0.27	0.08	2.96
1,262.0	4.88	67.11	1,257.0	12.6	86.8	-20.9	0.69	-0.56	4.76
1,287.0	4.51	65.02	1,282.0	13.5	88.7	-20.9	1.63	-1.48	-8.36
1,312.0	4.40	64.90	1,306.9	14.3	90.4	-20.8	0.44	-0.44	-0.48
1,337.0	4.35	65.41	1,331.8	15.1	92.2	-20.7	0.25	-0.20	2.04



Scientific Drilling International
Survey Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Grape Unit 2H
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:	Grape Unit 2H	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)
1,362.0	4.08	65.06	1,356.7	15.9	93.8	-20.6	1.08	-1.08	-1.40
1,387.0	3.92	66.32	1,381.7	16.6	95.4	-20.5	0.73	-0.64	5.04
1,412.0	3.82	65.44	1,406.6	17.3	97.0	-20.5	0.47	-0.40	-3.52
1,437.0	3.60	66.59	1,431.6	17.9	98.4	-20.4	0.93	-0.88	4.60
1,462.0	3.51	66.99	1,456.5	18.5	99.9	-20.4	0.37	-0.36	1.60
1,487.0	3.30	69.20	1,481.5	19.1	101.2	-20.4	0.99	-0.84	8.84
1,512.0	3.05	68.61	1,506.4	19.6	102.5	-20.4	1.01	-1.00	-2.36
1,537.0	2.77	70.34	1,531.4	20.0	103.7	-20.5	1.17	-1.12	6.92
1,562.0	2.63	73.65	1,556.4	20.4	104.8	-20.5	0.84	-0.56	13.24
1,587.0	2.38	70.87	1,581.4	20.7	105.9	-20.6	1.11	-1.00	-11.12
1,612.0	2.13	72.75	1,606.3	21.0	106.8	-20.7	1.04	-1.00	7.52
1,637.0	2.04	72.24	1,631.3	21.3	107.7	-20.8	0.37	-0.36	-2.04
1,662.0	1.78	69.10	1,656.3	21.6	108.5	-20.8	1.12	-1.04	-12.56
1,687.0	1.69	71.41	1,681.3	21.8	109.2	-20.8	0.46	-0.36	9.24
1,712.0	1.66	71.50	1,706.3	22.1	109.9	-20.9	0.12	-0.12	0.36
1,737.0	1.55	71.63	1,731.3	22.3	110.5	-20.9	0.44	-0.44	0.52
1,762.0	1.43	71.74	1,756.3	22.5	111.2	-21.0	0.48	-0.48	0.44
1,787.0	1.35	73.49	1,781.3	22.7	111.7	-21.0	0.36	-0.32	7.00
1,812.0	1.17	77.61	1,806.3	22.8	112.3	-21.1	0.81	-0.72	16.48
1,837.0	1.02	76.07	1,831.3	22.9	112.7	-21.2	0.61	-0.60	-6.16
1,862.0	0.98	75.38	1,856.2	23.0	113.2	-21.2	0.17	-0.16	-2.76
1,887.0	0.96	77.41	1,881.2	23.1	113.6	-21.3	0.16	-0.08	8.12
1,912.0	1.04	78.15	1,906.2	23.2	114.0	-21.4	0.32	0.32	2.96
1,937.0	0.96	72.75	1,931.2	23.3	114.4	-21.4	0.49	-0.32	-21.60
1,962.0	0.95	77.54	1,956.2	23.4	114.8	-21.5	0.32	-0.04	19.16
1,987.0	0.85	68.73	1,981.2	23.6	115.2	-21.5	0.68	-0.40	-35.24
2,012.0	0.60	67.34	2,006.2	23.7	115.5	-21.5	1.00	-1.00	-5.56
2,037.0	0.67	55.08	2,031.2	23.8	115.7	-21.5	0.61	0.28	-49.04
2,062.0	0.64	52.61	2,056.2	24.0	116.0	-21.4	0.16	-0.12	-9.88
2,087.0	0.59	47.57	2,081.2	24.1	116.2	-21.3	0.29	-0.20	-20.16
2,112.0	0.50	51.95	2,106.2	24.3	116.3	-21.3	0.40	-0.36	17.52
2,137.0	0.44	53.47	2,131.2	24.4	116.5	-21.2	0.25	-0.24	6.08
2,162.0	0.42	64.65	2,156.2	24.5	116.7	-21.2	0.34	-0.08	44.72
2,187.0	0.43	57.82	2,181.2	24.6	116.8	-21.2	0.21	0.04	-27.32
2,212.0	0.31	61.41	2,206.2	24.7	117.0	-21.1	0.49	-0.48	14.36
2,237.0	0.25	78.39	2,231.2	24.7	117.1	-21.1	0.41	-0.24	67.92
2,262.0	0.40	74.29	2,256.2	24.8	117.2	-21.1	0.61	0.60	-16.40
2,287.0	0.45	63.12	2,281.2	24.8	117.4	-21.2	0.39	0.20	-44.68
2,312.0	0.44	63.09	2,306.2	24.9	117.6	-21.1	0.04	-0.04	-0.12
2,337.0	0.34	68.63	2,331.2	25.0	117.7	-21.1	0.43	-0.40	22.96
2,362.0	0.34	52.98	2,356.2	25.1	117.8	-21.1	0.38	0.00	-63.40
2,387.0	0.38	41.26	2,381.2	25.2	118.0	-21.1	0.33	0.16	-46.88
2,412.0	0.26	59.03	2,406.2	25.3	118.1	-21.0	0.62	-0.48	71.08



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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:	Grape Unit 2H	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)
2,437.0	0.34	52.84	2,431.2	25.3	118.2	-21.0	0.34	0.32	-24.76
2,462.0	0.18	20.97	2,456.2	25.4	118.2	-20.9	0.84	-0.64	-127.48
2,487.0	0.12	64.60	2,481.2	25.5	118.3	-20.9	0.50	-0.24	174.52
2,512.0	0.11	354.61	2,506.2	25.5	118.3	-20.9	0.53	-0.04	-279.96
2,537.0	0.12	56.25	2,531.2	25.5	118.3	-20.8	0.47	0.04	246.56
2,562.0	0.08	31.66	2,556.2	25.6	118.3	-20.8	0.23	-0.16	-98.36
2,587.0	0.11	53.99	2,581.2	25.6	118.4	-20.8	0.19	0.12	89.32
2,612.0	0.09	327.72	2,606.2	25.6	118.4	-20.8	0.55	-0.08	-345.08
2,637.0	0.14	332.08	2,631.2	25.7	118.4	-20.7	0.20	0.20	17.44
2,662.0	0.19	339.21	2,656.2	25.7	118.3	-20.7	0.22	0.20	28.52
2,687.0	0.20	354.20	2,681.2	25.8	118.3	-20.6	0.21	0.04	59.96
2,712.0	0.12	354.96	2,706.2	25.9	118.3	-20.5	0.32	-0.32	3.04
2,737.0	0.21	19.87	2,731.2	26.0	118.3	-20.5	0.45	0.36	99.64
2,762.0	0.17	359.28	2,756.2	26.0	118.3	-20.4	0.31	-0.16	-82.36
2,787.0	0.21	11.14	2,781.2	26.1	118.3	-20.3	0.22	0.16	47.44
2,812.0	0.16	14.38	2,806.2	26.2	118.4	-20.3	0.20	-0.20	12.96
2,837.0	0.13	20.52	2,831.2	26.3	118.4	-20.2	0.13	-0.12	24.56
2,862.0	0.17	354.38	2,856.2	26.3	118.4	-20.1	0.31	0.16	-104.56
2,887.0	0.17	354.16	2,881.2	26.4	118.4	-20.1	0.00	0.00	-0.88
2,912.0	0.14	337.10	2,906.2	26.5	118.4	-20.0	0.22	-0.12	-68.24
2,937.0	0.10	331.19	2,931.2	26.5	118.3	-20.0	0.17	-0.16	-23.64
2,962.0	0.16	321.92	2,956.2	26.6	118.3	-19.9	0.25	0.24	-37.08
2,987.0	0.16	315.91	2,981.2	26.6	118.3	-19.8	0.07	0.00	-24.04
3,012.0	0.23	306.85	3,006.2	26.7	118.2	-19.8	0.31	0.28	-36.24
3,037.0	0.16	320.27	3,031.2	26.7	118.1	-19.7	0.33	-0.28	53.68
3,062.0	0.26	315.53	3,056.2	26.8	118.1	-19.6	0.41	0.40	-18.96
3,087.0	0.23	330.81	3,081.2	26.9	118.0	-19.5	0.29	-0.12	61.12
3,112.0	0.21	357.84	3,106.2	27.0	118.0	-19.4	0.42	-0.08	108.12
3,137.0	0.25	339.31	3,131.2	27.1	118.0	-19.3	0.34	0.16	-74.12
3,162.0	0.19	5.84	3,156.2	27.2	117.9	-19.2	0.47	-0.24	106.12
3,187.0	0.24	332.71	3,181.2	27.2	117.9	-19.1	0.53	0.20	-132.52
3,212.0	0.21	344.08	3,206.2	27.3	117.9	-19.0	0.21	-0.12	45.48
3,237.0	0.21	356.21	3,231.2	27.4	117.9	-18.9	0.18	0.00	48.52
3,262.0	0.19	340.73	3,256.2	27.5	117.9	-18.9	0.23	-0.08	-61.92
3,287.0	0.13	340.63	3,281.2	27.6	117.8	-18.8	0.24	-0.24	-0.40
3,312.0	0.07	338.41	3,306.2	27.6	117.8	-18.7	0.24	-0.24	-8.88
3,337.0	0.12	348.58	3,331.2	27.7	117.8	-18.7	0.21	0.20	40.68
3,362.0	0.13	330.61	3,356.2	27.7	117.8	-18.6	0.16	0.04	-71.88
3,387.0	0.14	305.47	3,381.2	27.7	117.8	-18.6	0.24	0.04	-100.56
3,412.0	0.12	332.22	3,406.2	27.8	117.7	-18.5	0.25	-0.08	107.00
3,437.0	0.18	306.68	3,431.2	27.8	117.7	-18.5	0.35	0.24	-102.16
3,462.0	0.18	322.73	3,456.2	27.9	117.6	-18.4	0.20	0.00	64.20
3,487.0	0.18	311.57	3,481.2	27.9	117.6	-18.3	0.14	0.00	-44.64
3,512.0	0.17	316.33	3,506.2	28.0	117.5	-18.3	0.07	-0.04	19.04



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Survey Report

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Company:	Antero Resources	Local Co-ordinate Reference:	Well Grape Unit 2H
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:	Grape Unit 2H	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	0.18	318.28	3,531.2	28.1	117.5	-18.2	0.05	0.04	7.80
3,562.0	0.19	312.96	3,556.2	28.1	117.4	-18.1	0.08	0.04	-21.28
3,587.0	0.23	312.79	3,581.2	28.2	117.3	-18.0	0.16	0.16	-0.68
3,612.0	0.21	318.23	3,606.2	28.2	117.3	-18.0	0.12	-0.08	21.76
3,637.0	0.26	313.63	3,631.2	28.3	117.2	-17.9	0.21	0.20	-18.40
3,662.0	0.28	321.48	3,656.2	28.4	117.1	-17.7	0.17	0.08	31.40
3,687.0	0.28	322.09	3,681.2	28.5	117.0	-17.6	0.01	0.00	2.44
3,712.0	0.28	325.20	3,706.2	28.6	117.0	-17.5	0.06	0.00	12.44
3,737.0	0.27	321.29	3,731.2	28.7	116.9	-17.4	0.09	-0.04	-15.64
3,762.0	0.19	322.28	3,756.2	28.8	116.8	-17.3	0.32	-0.32	3.96
3,787.0	0.29	314.82	3,781.2	28.8	116.8	-17.2	0.42	0.40	-29.84
3,812.0	0.20	317.10	3,806.2	28.9	116.7	-17.1	0.36	-0.36	9.12
3,837.0	0.20	312.17	3,831.2	29.0	116.6	-17.0	0.07	0.00	-19.72
3,862.0	0.27	327.89	3,856.2	29.1	116.6	-16.9	0.38	0.28	62.88
3,887.0	0.25	320.87	3,881.2	29.2	116.5	-16.8	0.15	-0.08	-28.08
3,912.0	0.17	314.54	3,906.2	29.2	116.4	-16.7	0.33	-0.32	-25.32
3,937.0	0.16	318.98	3,931.2	29.3	116.4	-16.7	0.06	-0.04	17.76
3,962.0	0.22	305.98	3,956.2	29.3	116.3	-16.6	0.29	0.24	-52.00
3,987.0	0.23	303.81	3,981.2	29.4	116.2	-16.5	0.05	0.04	-8.68
4,012.0	0.18	302.18	4,006.2	29.4	116.2	-16.4	0.20	-0.20	-6.52
4,037.0	0.26	303.37	4,031.2	29.5	116.1	-16.4	0.32	0.32	4.76
4,062.0	0.13	321.95	4,056.2	29.5	116.0	-16.3	0.57	-0.52	74.32
4,087.0	0.23	315.21	4,081.2	29.6	116.0	-16.2	0.41	0.40	-26.96
4,112.0	0.25	316.69	4,106.2	29.7	115.9	-16.1	0.08	0.08	5.92
4,137.0	0.23	313.26	4,131.2	29.8	115.8	-16.0	0.10	-0.08	-13.72
4,162.0	0.26	313.56	4,156.2	29.8	115.7	-15.9	0.12	0.12	1.20
4,187.0	0.31	309.08	4,181.2	29.9	115.7	-15.8	0.22	0.20	-17.92
4,212.0	0.33	304.70	4,206.2	30.0	115.5	-15.7	0.13	0.08	-17.52
4,237.0	0.15	335.09	4,231.2	30.1	115.5	-15.6	0.86	-0.72	121.56
4,262.0	0.23	315.85	4,256.2	30.1	115.4	-15.5	0.41	0.32	-76.96
4,287.0	0.08	23.50	4,281.2	30.2	115.4	-15.5	0.85	-0.60	270.60
4,312.0	0.10	330.11	4,306.2	30.2	115.4	-15.4	0.33	0.08	-213.56
4,337.0	0.23	289.68	4,331.2	30.2	115.3	-15.4	0.67	0.52	-161.72
4,362.0	0.10	265.41	4,356.2	30.3	115.3	-15.3	0.58	-0.52	-97.08
4,387.0	0.11	246.10	4,381.2	30.3	115.2	-15.3	0.15	0.04	-77.24
4,412.0	0.22	242.04	4,406.2	30.2	115.2	-15.3	0.44	0.44	-16.24
4,437.0	0.32	244.94	4,431.2	30.2	115.0	-15.3	0.40	0.40	11.60
4,462.0	0.28	232.69	4,456.2	30.1	114.9	-15.4	0.30	-0.16	-49.00
4,487.0	0.28	225.42	4,481.2	30.0	114.8	-15.4	0.14	0.00	-29.08
4,512.0	0.32	233.22	4,506.2	29.9	114.7	-15.4	0.23	0.16	31.20
4,537.0	0.31	212.42	4,531.2	29.8	114.7	-15.5	0.46	-0.04	-83.20
4,562.0	0.37	229.76	4,556.2	29.7	114.6	-15.6	0.47	0.24	69.36
4,587.0	0.30	217.97	4,581.2	29.6	114.5	-15.6	0.39	-0.28	-47.16



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Survey Report



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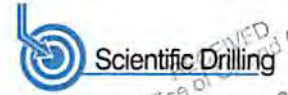
Company:	Antero Resources	Local Co-ordinate Reference:	Well Grape Unit 2H
Project:	Doddridge County WV	TVD Reference:	Patterson 347: 1189' GL + 25' KB @ 1214.0usft
Site:	Cofor Pad: Outback Morton Nova Grape Rainer	MD Reference:	Patterson 347: 1189' GL + 25' KB @ 1214.0usft
Well:	Grape Unit 2H	North Reference:	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)
4,612.0	0.41	233.66	4,606.2	29.5	114.3	-15.7	0.58	0.44	62.76
4,637.0	0.32	222.49	4,631.2	29.4	114.2	-15.7	0.46	-0.36	-44.68
4,662.0	0.40	240.27	4,656.2	29.3	114.1	-15.8	0.55	0.32	71.12
4,687.0	0.28	205.24	4,681.2	29.2	114.0	-15.8	0.94	-0.48	-140.12
4,712.0	0.34	245.85	4,706.2	29.1	113.9	-15.9	0.89	0.24	162.44
4,737.0	0.25	212.02	4,731.2	29.1	113.8	-15.9	0.77	-0.36	-135.32
4,762.0	0.26	231.42	4,756.2	29.0	113.7	-15.9	0.35	0.04	77.60
4,787.0	0.26	227.64	4,781.2	28.9	113.6	-16.0	0.07	0.00	-15.12
4,812.0	0.29	219.57	4,806.2	28.8	113.6	-16.0	0.20	0.12	-32.28
4,837.0	0.29	222.94	4,831.2	28.7	113.5	-16.1	0.07	0.00	13.48
4,862.0	0.24	245.46	4,856.2	28.7	113.4	-16.1	0.46	-0.20	90.08
4,887.0	0.26	226.37	4,881.2	28.6	113.3	-16.1	0.34	0.08	-76.36
4,912.0	0.22	223.24	4,906.2	28.5	113.2	-16.2	0.17	-0.16	-12.52
4,937.0	0.17	242.22	4,931.2	28.5	113.2	-16.2	0.32	-0.20	75.92
4,962.0	0.12	206.08	4,956.2	28.4	113.1	-16.2	0.41	-0.20	-144.56
4,987.0	0.18	249.87	4,981.2	28.4	113.1	-16.2	0.50	0.24	175.16
5,012.0	0.18	251.57	5,006.2	28.4	113.0	-16.2	0.02	0.00	6.80
5,037.0	0.14	236.83	5,031.2	28.3	112.9	-16.2	0.23	-0.16	-58.96
5,062.0	0.09	242.73	5,056.2	28.3	112.9	-16.2	0.21	-0.20	23.60
5,087.0	0.16	265.78	5,081.2	28.3	112.8	-16.2	0.34	0.28	92.20
5,112.0	0.03	226.30	5,106.2	28.3	112.8	-16.2	0.55	-0.52	-157.92
5,137.0	0.09	158.11	5,131.2	28.3	112.8	-16.2	0.33	0.24	-272.76
5,162.0	0.04	254.77	5,156.2	28.2	112.8	-16.3	0.41	-0.20	386.64
5,187.0	0.09	239.79	5,181.2	28.2	112.8	-16.3	0.21	0.20	-59.92
5,212.0	0.06	275.27	5,206.2	28.2	112.7	-16.3	0.22	-0.12	141.92
5,237.0	0.07	276.49	5,231.2	28.2	112.7	-16.2	0.04	0.04	4.88
5,262.0	0.04	191.99	5,256.2	28.2	112.7	-16.2	0.31	-0.12	-338.00
5,287.0	0.09	167.93	5,281.2	28.2	112.7	-16.3	0.22	0.20	-96.24
5,312.0	0.08	157.31	5,306.2	28.2	112.7	-16.3	0.07	-0.04	-42.48
5,337.0	0.12	94.22	5,331.2	28.1	112.7	-16.3	0.44	0.16	-252.36
5,362.0	0.05	133.76	5,356.2	28.1	112.8	-16.4	0.35	-0.28	158.16
5,387.0	0.03	301.09	5,381.2	28.1	112.8	-16.4	0.32	-0.08	669.32
5,412.0	0.02	359.45	5,406.2	28.1	112.8	-16.4	0.10	-0.04	233.44
5,437.0	0.02	207.26	5,431.2	28.1	112.8	-16.4	0.16	0.00	-608.76
5,462.0	0.03	359.83	5,456.2	28.1	112.8	-16.4	0.19	0.04	610.28
5,487.0	0.05	347.34	5,481.2	28.2	112.8	-16.3	0.09	0.08	-49.96
5,512.0	0.06	343.45	5,506.2	28.2	112.8	-16.3	0.04	0.04	-15.56
5,537.0	0.10	42.20	5,531.2	28.2	112.8	-16.3	0.34	0.16	235.00
5,562.0	0.13	318.92	5,556.2	28.2	112.8	-16.3	0.62	0.12	-333.12
5,587.0	0.02	357.83	5,581.2	28.3	112.7	-16.2	0.46	-0.44	155.64
5,612.0	0.08	277.16	5,606.2	28.3	112.7	-16.2	0.32	0.24	-322.68
5,637.0	0.08	270.67	5,631.2	28.3	112.7	-16.2	0.04	0.00	-25.96
5,662.0	0.04	350.83	5,656.2	28.3	112.7	-16.2	0.33	-0.16	320.64



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Survey Report



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Company:	Antero Resources	Local Co-ordinate Reference:	Well Grape Unit 2H
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:	Grape Unit 2H	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	0.13	260.91	5,681.2	28.3	112.6	-16.2	0.54	0.36	-359.68
5,712.0	0.05	306.04	5,706.2	28.3	112.6	-16.2	0.40	-0.32	180.52
5,737.0	0.09	260.47	5,731.2	28.3	112.6	-16.1	0.26	0.16	-182.28
5,762.0	0.12	273.07	5,756.2	28.3	112.5	-16.1	0.15	0.12	50.40
5,787.0	0.04	254.36	5,781.2	28.3	112.5	-16.1	0.33	-0.32	-74.84
5,812.0	0.06	45.57	5,806.2	28.3	112.5	-16.1	0.39	0.08	604.84
5,837.0	0.10	29.00	5,831.2	28.3	112.5	-16.1	0.18	0.16	-66.28
5,862.0	0.11	332.19	5,856.2	28.4	112.5	-16.0	0.40	0.04	-227.24
5,887.0	0.12	307.60	5,881.2	28.4	112.5	-16.0	0.20	0.04	-98.36
5,912.0	0.10	314.99	5,906.2	28.4	112.5	-16.0	0.10	-0.08	29.56
5,937.0	0.07	235.78	5,931.2	28.4	112.4	-15.9	0.44	-0.12	-316.84
5,941.0	0.09	224.59	5,935.2	28.4	112.4	-15.9	0.63	0.50	-279.75
6,001.0	0.20	314.20	5,995.2	28.5	112.3	-15.9	0.36	0.18	149.35
First SDI MWD @ 6001									
6,095.0	0.07	260.81	6,089.2	28.6	112.1	-15.7	0.18	-0.14	-56.80
6,189.0	0.94	60.85	6,183.2	29.0	112.8	-15.6	1.07	0.93	170.26
6,220.0	4.56	60.80	6,214.2	29.7	114.1	-15.4	11.68	11.68	-0.16
6,252.0	8.05	56.81	6,246.0	31.5	117.0	-14.8	10.99	10.91	-12.47
6,283.0	11.48	55.26	6,276.5	34.5	121.4	-13.7	11.10	11.06	-5.00
6,315.0	14.87	56.23	6,307.7	38.6	127.4	-12.2	10.62	10.59	3.03
6,346.0	17.70	59.63	6,337.4	43.2	134.8	-10.7	9.63	9.13	10.97
6,377.0	20.83	62.71	6,366.7	48.1	143.8	-9.5	10.61	10.10	9.94
6,409.0	24.12	65.10	6,396.2	53.4	154.8	-8.7	10.67	10.28	7.47
6,440.0	27.31	66.21	6,424.2	59.0	167.0	-8.2	10.41	10.29	3.58
6,471.0	30.55	66.13	6,451.3	65.0	180.7	-7.7	10.45	10.45	-0.26
6,503.0	34.42	65.84	6,478.3	72.0	196.4	-7.2	12.10	12.09	-0.91
6,534.0	38.47	64.99	6,503.2	79.7	213.2	-6.4	13.17	13.06	-2.74
6,566.0	41.06	62.96	6,527.8	88.7	231.5	-4.9	9.05	8.09	-6.34
6,597.0	41.40	57.07	6,551.1	98.9	249.2	-2.1	12.57	1.10	-19.00
6,628.0	42.25	50.99	6,574.2	111.0	265.9	2.8	13.36	2.74	-19.61
6,660.0	43.52	45.50	6,597.7	125.5	282.2	10.1	12.33	3.97	-17.16
6,691.0	45.43	40.23	6,619.8	141.4	296.9	19.3	13.41	6.16	-17.00
Middlesex @ 6691									
6,722.0	47.72	35.56	6,641.1	159.2	310.7	30.6	13.20	7.39	-15.06
6,754.0	50.63	31.61	6,662.1	179.4	324.1	44.3	13.03	9.09	-12.34
6,785.0	53.34	27.01	6,681.2	200.7	336.0	59.5	14.59	8.74	-14.84
6,816.0	55.65	22.15	6,699.2	223.6	346.5	76.8	14.78	7.45	-15.68
6,848.0	57.93	17.18	6,716.7	248.8	355.5	96.8	14.82	7.13	-15.53
6,879.0	60.26	12.51	6,732.6	274.5	362.3	118.1	14.95	7.52	-15.06
6,910.0	62.17	9.50	6,747.6	301.2	367.5	140.8	10.51	6.16	-9.71
6,914.0	62.43	9.17	6,749.4	304.7	368.0	143.8	9.88	6.61	-8.29
Burket @ 6914									
6,941.0	64.24	6.97	6,761.5	328.6	371.4	164.7	9.88	6.69	-8.14
6,973.0	66.71	4.55	6,774.8	357.5	374.3	180.4	10.34	7.72	-7.56



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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:	Grape Unit 2H	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)
6,984.0	67.38	3.53	6,779.1	367.6	375.1	199.5	10.50	6.11	-9.28
Tully @ 6984									
7,004.0	68.62	1.70	6,786.6	386.2	375.9	216.4	10.50	6.19	-9.15
7,035.0	70.63	359.11	6,797.4	415.2	376.1	243.2	10.17	6.48	-8.35
7,066.0	72.78	356.66	6,807.1	444.6	375.0	270.9	10.22	6.94	-7.90
7,098.0	74.62	354.29	6,816.1	475.2	372.6	300.1	9.14	5.75	-7.41
7,117.0	75.91	353.31	6,820.9	493.5	370.6	317.8	8.43	6.80	-5.15
Marcellus @ 7117									
7,129.0	76.73	352.70	6,823.8	505.1	369.2	329.1	8.43	6.82	-5.10
7,160.0	78.63	350.51	6,830.4	535.0	364.8	358.5	9.23	6.13	-7.06
7,191.0	79.88	348.88	6,836.2	565.0	359.3	388.3	6.55	4.03	-5.26
7,223.0	80.91	346.89	6,841.5	595.8	352.7	419.4	6.92	3.22	-6.22
7,254.0	82.73	344.43	6,845.9	625.6	345.1	449.8	9.81	5.87	-7.94
7,285.0	84.18	342.42	6,849.5	655.1	336.3	480.4	7.96	4.68	-6.48
7,317.0	85.43	340.61	6,852.3	685.3	326.2	512.2	6.85	3.91	-5.66
7,342.0	85.71	339.90	6,854.3	708.8	317.8	537.1	3.04	1.12	-2.84
7,374.0	87.68	336.34	6,856.1	738.4	305.9	569.1	12.70	6.16	-11.13
7,405.0	89.03	334.34	6,857.0	766.6	292.9	600.0	7.78	4.35	-6.45
7,436.0	89.23	333.61	6,857.5	794.4	279.3	631.0	2.44	0.65	-2.35
7,530.0	91.34	333.07	6,857.0	878.4	237.2	724.7	2.32	2.24	-0.57
7,624.0	90.64	333.63	6,855.4	962.4	195.0	818.3	0.95	-0.74	0.60
7,717.0	89.36	333.93	6,855.4	1,045.9	153.9	911.1	1.41	-1.38	0.32
7,811.0	89.23	337.98	6,856.6	1,131.7	115.6	1,005.0	4.31	-0.14	4.31
7,905.0	90.97	344.26	6,856.4	1,220.6	85.2	1,098.8	6.93	1.85	6.68
7,999.0	90.74	340.50	6,855.0	1,310.1	56.8	1,192.5	4.01	-0.24	-4.00
8,093.0	90.40	337.99	6,854.0	1,398.0	23.5	1,286.5	2.69	-0.36	-2.67
8,186.0	89.83	336.10	6,853.9	1,483.6	-12.8	1,379.5	2.12	-0.61	-2.03
8,280.0	90.23	339.02	6,853.8	1,570.5	-48.7	1,473.4	3.14	0.43	3.11
8,374.0	90.97	340.98	6,852.8	1,658.8	-80.8	1,567.4	2.23	0.79	2.09
8,468.0	91.04	340.63	6,851.2	1,747.6	-111.7	1,661.2	0.38	0.07	-0.37
8,562.0	89.50	336.65	6,850.7	1,835.1	-145.9	1,755.2	4.54	-1.64	-4.23
8,655.0	91.14	342.53	6,850.2	1,922.2	-178.4	1,848.1	6.56	1.76	6.32
8,749.0	90.54	342.56	6,848.8	2,011.9	-206.6	1,941.8	0.64	-0.64	0.03
8,843.0	90.57	340.70	6,847.9	2,101.1	-236.2	2,035.6	1.98	0.03	-1.98
8,937.0	91.38	342.13	6,846.3	2,190.2	-266.1	2,129.4	1.75	0.86	1.52
9,031.0	90.77	337.92	6,844.6	2,278.5	-298.2	2,223.3	4.52	-0.85	-4.48
9,124.0	90.27	336.66	6,843.7	2,364.3	-334.1	2,316.3	1.46	-0.54	-1.35
9,218.0	90.54	337.30	6,843.1	2,450.8	-370.9	2,410.3	0.74	0.29	0.68
9,312.0	91.01	340.06	6,841.8	2,538.3	-405.1	2,504.2	2.98	0.50	2.94
9,405.0	91.14	338.22	6,840.0	2,625.2	-438.2	2,597.2	1.98	0.14	-1.98
9,499.0	90.74	337.20	6,838.5	2,712.2	-473.8	2,691.2	1.17	-0.43	-1.09
9,593.0	91.18	338.46	6,836.9	2,799.2	-509.3	2,785.2	1.42	0.47	1.34
9,687.0	90.20	335.63	6,835.8	2,885.8	-545.9	2,879.1	3.19	-1.04	-3.01
9,781.0	91.18	339.96	6,834.7	2,972.8	-581.4	2,973.1	4.72	1.04	4.61

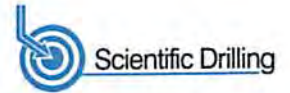


Scientific Drilling International
Survey Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Grape Unit 2H
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:	Grape Unit 2H	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)	
9,875.0	88.52	337.15	6,834.9	3,060.2	-615.8	3,067.1	4.12	-2.83	-2.99	
9,970.0	88.96	332.91	6,837.0	3,146.3	-655.9	3,161.9	4.49	0.46	-4.46	
10,064.0	89.19	331.99	6,838.5	3,229.7	-699.4	3,255.5	1.01	0.24	-0.98	
10,158.0	91.71	336.37	6,837.8	3,314.2	-740.3	3,349.2	5.38	2.68	4.66	
10,252.0	91.95	336.57	6,834.8	3,400.4	-777.8	3,443.2	0.33	0.26	0.21	
10,346.0	91.38	336.48	6,832.0	3,486.6	-815.2	3,537.1	0.61	-0.61	-0.10	
10,440.0	91.24	336.31	6,829.9	3,572.7	-852.9	3,631.0	0.23	-0.15	-0.18	
10,535.0	90.37	335.00	6,828.6	3,659.2	-892.0	3,726.0	1.66	-0.92	-1.38	
10,629.0	91.18	338.34	6,827.3	3,745.5	-929.2	3,819.9	3.66	0.86	3.55	
10,723.0	91.68	338.19	6,824.9	3,832.8	-964.0	3,913.9	0.56	0.53	-0.16	
10,817.0	91.68	338.05	6,822.2	3,920.0	-999.0	4,007.8	0.15	0.00	-0.15	
10,911.0	91.01	337.31	6,820.0	4,006.9	-1,034.7	4,101.8	1.06	-0.71	-0.79	
11,005.0	92.05	339.98	6,817.5	4,094.4	-1,068.9	4,195.8	3.05	1.11	2.84	
11,099.0	89.03	336.23	6,816.6	4,181.6	-1,104.0	4,289.7	5.12	-3.21	-3.99	
11,193.0	89.70	336.90	6,817.6	4,267.9	-1,141.4	4,383.7	1.01	0.71	0.71	
11,288.0	91.24	338.75	6,816.8	4,355.8	-1,177.2	4,478.7	2.53	1.62	1.95	
11,382.0	91.21	338.74	6,814.8	4,443.4	-1,211.3	4,572.7	0.03	-0.03	-0.01	
11,476.0	91.11	337.89	6,812.9	4,530.7	-1,246.0	4,666.6	0.91	-0.11	-0.90	
11,570.0	91.21	336.19	6,811.0	4,617.3	-1,282.7	4,760.6	1.81	0.11	-1.81	
11,664.0	92.86	334.90	6,807.7	4,702.8	-1,321.6	4,854.5	2.23	1.76	-1.37	
11,758.0	92.51	336.54	6,803.3	4,788.4	-1,360.2	4,948.3	1.78	-0.37	1.74	
11,852.0	90.37	333.26	6,800.9	4,873.4	-1,400.0	5,042.1	4.17	-2.28	-3.49	
11,946.0	90.91	336.17	6,799.9	4,958.4	-1,440.2	5,135.9	3.15	0.57	3.10	
12,040.0	91.61	339.30	6,797.8	5,045.4	-1,475.8	5,229.9	3.41	0.74	3.33	
12,134.0	91.17	337.46	6,795.5	5,132.7	-1,510.4	5,323.9	2.01	-0.47	-1.96	
12,228.0	90.30	337.12	6,794.3	5,219.4	-1,546.7	5,417.9	0.99	-0.93	-0.36	
12,322.0	92.01	340.44	6,792.4	5,307.0	-1,580.7	5,511.8	3.97	1.82	3.53	
12,417.0	90.44	336.95	6,790.4	5,395.5	-1,615.2	5,606.8	4.03	-1.65	-3.67	
12,511.0	91.31	338.50	6,789.0	5,482.5	-1,650.8	5,700.8	1.89	0.93	1.65	
12,605.0	91.78	340.44	6,786.4	5,570.5	-1,683.8	5,794.7	2.12	0.50	2.06	
12,699.0	91.85	341.17	6,783.4	5,659.2	-1,714.7	5,888.5	0.78	0.07	0.78	
12,793.0	91.54	340.59	6,780.7	5,748.0	-1,745.4	5,982.3	0.70	-0.33	-0.62	
12,888.0	92.32	341.43	6,777.5	5,837.8	-1,776.3	6,077.1	1.21	0.82	0.88	
12,982.0	92.11	340.36	6,773.8	5,926.5	-1,807.1	6,170.9	1.16	-0.22	-1.14	
13,076.0	90.60	339.64	6,771.6	6,014.8	-1,839.2	6,264.9	1.78	-1.61	-0.77	
13,170.0	90.64	337.33	6,770.6	6,102.2	-1,873.7	6,358.8	2.46	0.04	-2.46	
13,264.0	90.57	338.59	6,769.6	6,189.4	-1,909.0	6,452.8	1.34	-0.07	1.34	
13,359.0	90.91	339.37	6,768.4	6,278.0	-1,943.0	6,547.8	0.90	0.36	0.82	
13,453.0	90.91	338.84	6,766.9	6,365.8	-1,976.6	6,641.8	0.56	0.00	-0.56	
13,547.0	90.74	337.73	6,765.5	6,453.2	-2,011.3	6,735.8	1.19	-0.18	-1.18	
13,641.0	90.27	337.10	6,764.7	6,540.0	-2,047.4	6,829.7	0.84	-0.50	-0.67	
13,735.0	90.00	337.76	6,764.5	6,626.8	-2,083.5	6,923.7	0.76	-0.29	0.70	
13,829.0	90.91	337.32	6,763.7	6,713.6	-2,119.4	7,017.7	1.08	0.97	-0.47	



Company:	Antero Resources	Local Co-ordinate Reference:	Well Grape Unit 2H
Project:	Doddridge County WW	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:	Grape Unit 2H	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)	
13,923.0	90.64	336.31	6,762.5	6,800.0	-2,156.4	7,111.7	1.11	-0.29	-1.07	
14,017.0	90.47	337.46	6,761.5	6,886.5	-2,193.3	7,205.7	1.24	-0.18	1.22	
14,111.0	90.47	336.88	6,760.8	6,973.1	-2,229.8	7,299.7	0.62	0.00	-0.62	
14,205.0	90.34	338.64	6,760.1	7,060.1	-2,265.4	7,393.7	1.88	-0.14	1.87	
14,299.0	90.27	336.60	6,759.6	7,147.0	-2,301.2	7,487.7	2.17	-0.07	-2.17	
14,393.0	90.94	338.41	6,758.6	7,233.9	-2,337.1	7,581.7	2.05	0.71	1.93	
14,487.0	90.94	337.64	6,757.1	7,321.0	-2,372.3	7,675.6	0.82	0.00	-0.82	
14,581.0	90.81	337.39	6,755.6	7,407.9	-2,408.2	7,769.6	0.30	-0.14	-0.27	
14,675.0	90.44	336.74	6,754.6	7,494.4	-2,444.9	7,863.6	0.80	-0.39	-0.69	
14,770.0	89.80	338.43	6,754.4	7,582.2	-2,481.1	7,958.6	1.90	-0.67	1.78	
14,864.0	89.97	337.32	6,754.6	7,669.3	-2,516.5	8,052.6	1.19	0.18	-1.18	
14,958.0	90.37	338.38	6,754.3	7,756.4	-2,551.9	8,146.6	1.21	0.43	1.13	
15,052.0	91.44	342.74	6,752.8	7,845.0	-2,583.2	8,240.5	4.78	1.14	4.64	
15,146.0	87.68	338.50	6,753.6	7,933.6	-2,614.4	8,334.3	6.03	-4.00	-4.51	
15,240.0	88.35	338.48	6,756.8	8,021.0	-2,648.8	8,428.2	0.71	0.71	-0.02	
15,334.0	89.33	338.09	6,758.7	8,108.3	-2,683.6	8,522.2	1.12	1.04	-0.41	
15,428.0	89.53	338.25	6,759.7	8,195.6	-2,718.5	8,616.2	0.27	0.21	0.17	
15,490.0	88.93	336.81	6,760.5	8,252.9	-2,742.2	8,678.2	2.51	-0.97	-2.32	
Last SDI MWD @ 15490										
15,551.0	88.93	336.81	6,761.6	8,308.9	-2,766.2	8,739.2	0.00	0.00	0.00	
Projection To Bit @ 15551 MD / 6761 TVD										

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,691.0	6,619.8	Middlesex @ 6691		0.00	
6,914.0	6,749.4	Burket @ 6914		0.00	
6,984.0	6,779.1	Tully @ 6984		0.00	
7,117.0	6,820.9	Marcellus @ 7117		0.00	

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
6,001.0	5,995.2	28.5	112.3	First SDI MWD @ 6001
15,490.0	6,760.5	8,252.9	-2,742.2	Last SDI MWD @ 15490
15,551.0	6,761.6	8,308.9	-2,766.2	Projection To Bit @ 15551 MD / 6761 TVD

Checked By: _____ Approved By: _____ Date: _____