



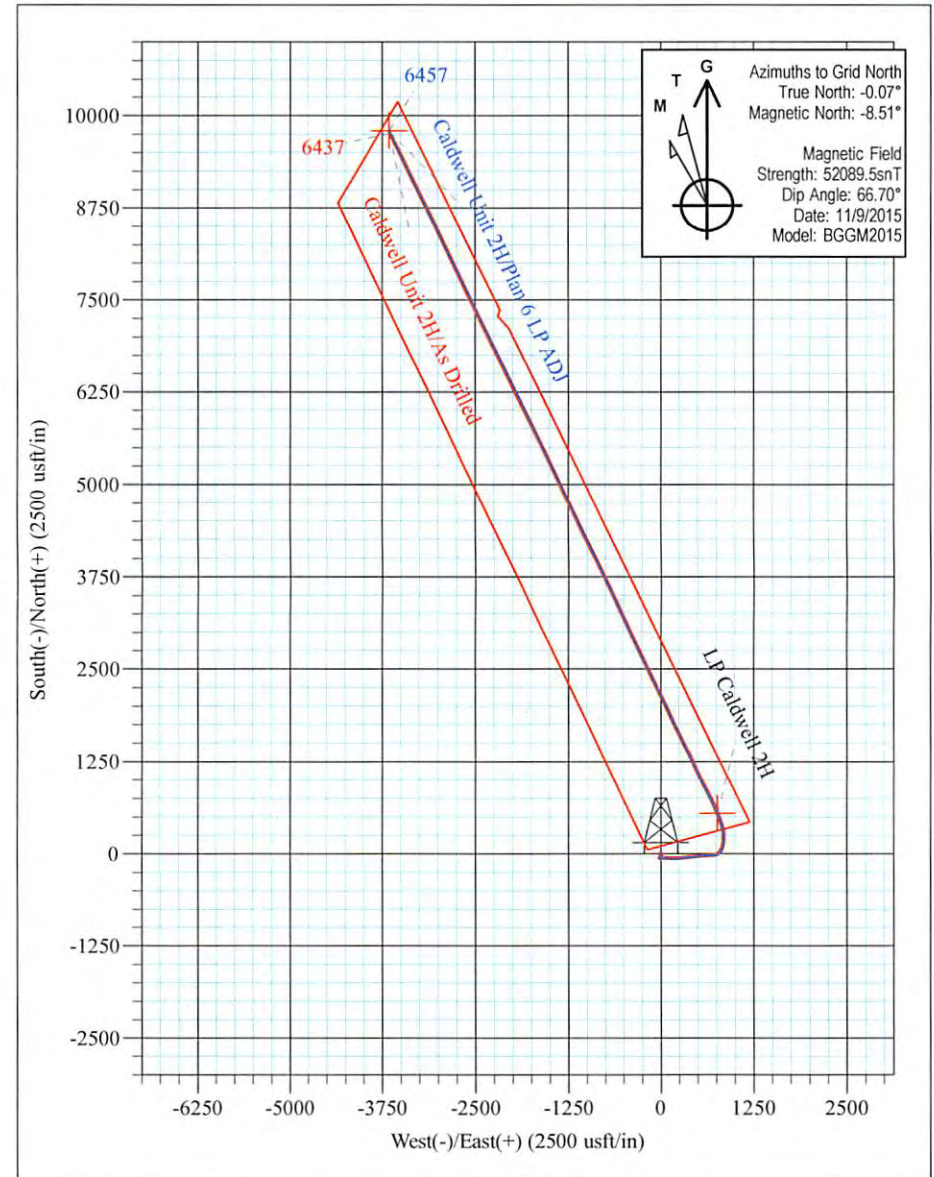
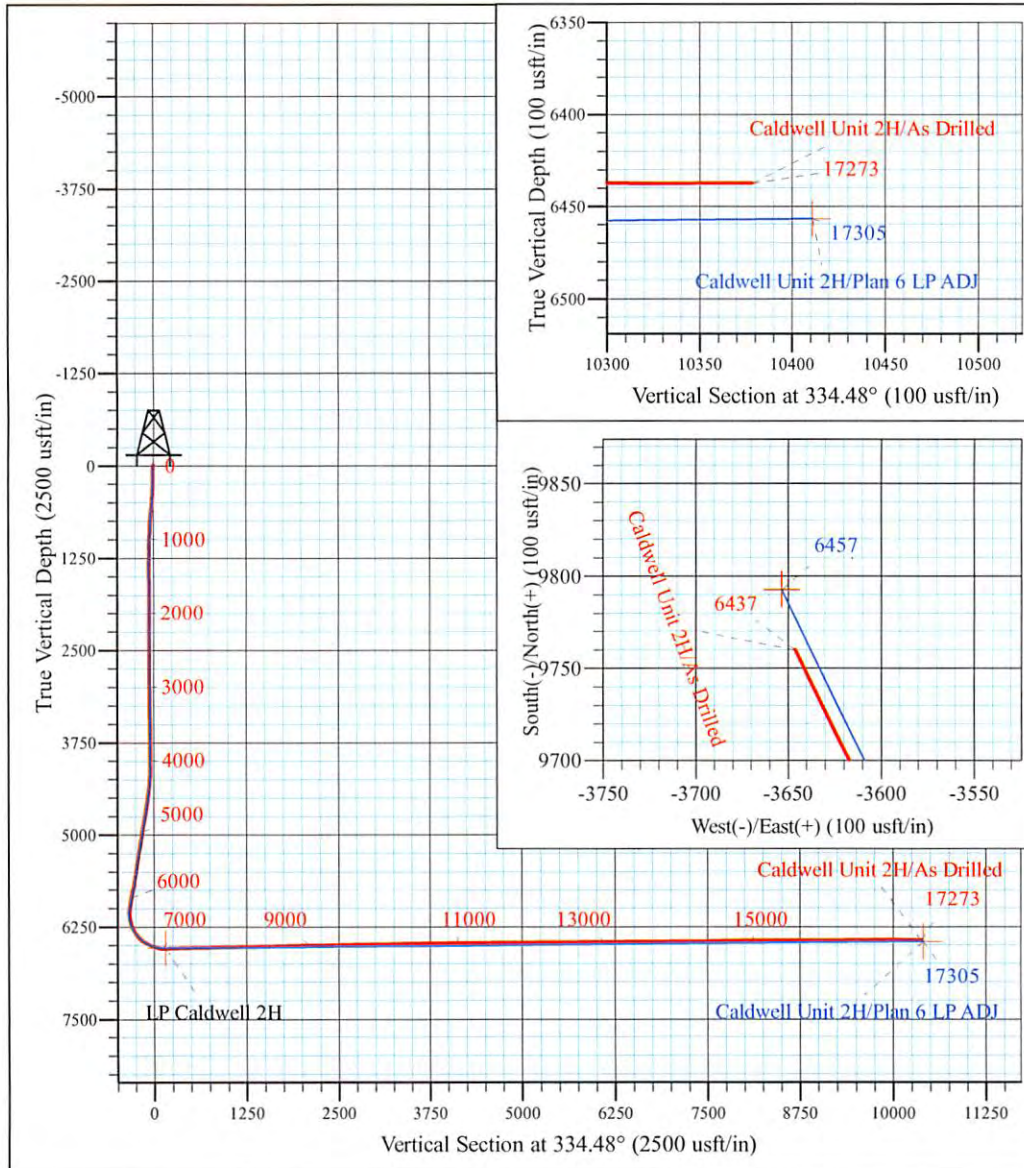
Mackay Pad - Caldwell/Greenback/McNabb
 Caldwell Unit 2H
 Plan 6 LP ADJ
 Precision 523: GL 1099' + KB 19 @ 1118.0usft
 Ritchie County WV

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: **Caldwell Unit 2H SHL**

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	14248717.95	1669506.09	39° 14' 17.875 N	80° 53' 50.147 W



Caldwell Unit 2H
Approx. BHL
 39° 15' 54.416 N 80° 54' 36.381 W

Shane Rhodes
 13:04, November 19 2015
 Scientific Drilling International
 124 Vista Drive
 Charleroi, PA 15022



Company:	Antero Resources	Local Co-ordinate Reference:	Well Caldwell Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 523: GL 1099' + KB 19 @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: GL 1099' + KB 19 @ 1118.0usft
Well:	Caldwell Unit 2H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

Project	Ritchie County WV, Ritchie County WV, WV North		
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	Mackay Pad - Caldwell/Greenback/McNabb				
Site Position:		Northing:	14,248,714.78 usft	Latitude:	39° 14' 17.843 N
From:	Map	Easting:	1,669,496.15 usft	Longitude:	80° 53' 50.274 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.06 °

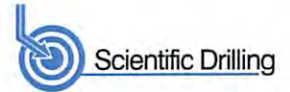
Well	Caldwell Unit 2H, Marcellus					
Well Position	+N/-S	0.0 usft	Northing:	14,248,717.94 usft	Latitude:	39° 14' 17.875 N
	+E/-W	0.0 usft	Easting:	1,669,506.09 usft	Longitude:	80° 53' 50.147 W
Position Uncertainty		2.0 usft	Wellhead Elevation:	1,118.0 usft	Ground Level:	1,099.0 usft

Wellbore	Original Wellpath				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2015	11/9/2015	-8.45	66.70	52,089

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	334.48	

Survey Program	Date	11/19/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
106.0	5,971.0	Survey #8 Final Gyro (Original Wellpath)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4	
6,011.0	17,273.0	Survey #9 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	
106.0	0.75	234.13	106.0	-0.4	-0.6	-0.1	0.71	0.71	0.00	
First SDI Gyro @ 106										
131.0	0.81	228.42	131.0	-0.6	-0.8	-0.2	0.39	0.24	-22.84	
156.0	0.84	229.37	156.0	-0.9	-1.1	-0.3	0.13	0.12	3.80	
181.0	0.93	230.92	181.0	-1.1	-1.4	-0.4	0.37	0.36	6.20	
206.0	0.88	221.81	206.0	-1.4	-1.7	-0.5	0.61	-0.20	-36.44	
231.0	1.54	195.27	231.0	-1.8	-1.9	-0.8	3.40	2.64	-106.16	
256.0	2.26	185.71	256.0	-2.7	-2.0	-1.5	3.14	2.88	-38.24	
281.0	2.59	178.28	280.9	-3.7	-2.1	-2.5	1.82	1.32	-29.72	



Company:	Antero Resources	Local Co-ordinate Reference:	Well Caldwell Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 523: GL 1099' + KB 19 @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: GL 1099' + KB 19 @ 1118.0usft
Well:	Caldwell 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)	
306.0	3.01	171.94	305.9	-4.9	-2.0	-3.6	2.08	1.68	-25.36	
331.0	3.39	166.36	330.9	-6.3	-1.7	-5.0	1.96	1.52	-22.32	
356.0	3.72	164.71	355.8	-7.8	-1.3	-6.5	1.38	1.32	-6.60	
381.0	3.96	165.12	380.8	-9.4	-0.9	-8.1	0.97	0.96	1.64	
406.0	4.19	164.20	405.7	-11.1	-0.4	-9.9	0.96	0.92	-3.68	
431.0	4.43	164.98	430.6	-12.9	0.1	-11.7	0.99	0.96	3.12	
456.0	4.57	164.38	455.6	-14.8	0.6	-13.6	0.59	0.56	-2.40	
481.0	4.57	164.25	480.5	-16.7	1.2	-15.6	0.04	0.00	-0.52	
506.0	4.73	165.00	505.4	-18.7	1.7	-17.6	0.68	0.64	3.00	
531.0	4.78	165.28	530.3	-20.7	2.2	-19.6	0.22	0.20	1.12	
556.0	5.21	169.94	555.2	-22.8	2.7	-21.8	2.36	1.72	18.64	
581.0	5.26	170.45	580.1	-25.1	3.1	-24.0	0.27	0.20	2.04	
606.0	5.34	170.81	605.0	-27.4	3.5	-26.2	0.35	0.32	1.44	
631.0	5.32	172.04	629.9	-29.6	3.8	-28.4	0.46	-0.08	4.92	
656.0	5.40	176.00	654.8	-32.0	4.0	-30.6	1.51	0.32	15.84	
681.0	5.39	177.09	679.7	-34.3	4.2	-32.8	0.41	-0.04	4.36	
706.0	5.38	178.12	704.6	-36.7	4.3	-34.9	0.39	-0.04	4.12	
731.0	5.39	178.32	729.5	-39.0	4.4	-37.1	0.09	0.04	0.80	
756.0	5.39	178.67	754.3	-41.4	4.4	-39.2	0.13	0.00	1.40	
781.0	4.63	179.80	779.3	-43.5	4.4	-41.2	3.07	-3.04	4.52	
806.0	4.20	179.04	804.2	-45.5	4.5	-43.0	1.74	-1.72	-3.04	
831.0	3.86	178.82	829.1	-47.2	4.5	-44.5	1.36	-1.36	-0.88	
856.0	3.58	177.69	854.1	-48.8	4.5	-46.0	1.16	-1.12	-4.52	
881.0	3.32	178.27	879.0	-50.3	4.6	-47.4	1.05	-1.04	2.32	
906.0	3.05	177.76	904.0	-51.7	4.7	-48.7	1.09	-1.08	-2.04	
931.0	2.74	179.66	928.9	-53.0	4.7	-49.8	1.30	-1.24	7.60	
956.0	2.58	181.76	953.9	-54.2	4.7	-50.9	0.75	-0.64	8.40	
981.0	2.29	182.58	978.9	-55.2	4.6	-51.8	1.17	-1.16	3.28	
1,006.0	2.06	184.07	1,003.9	-56.2	4.6	-52.7	0.95	-0.92	5.96	
1,031.0	1.75	182.59	1,028.9	-57.0	4.5	-53.4	1.26	-1.24	-5.92	
1,056.0	1.59	180.95	1,053.9	-57.7	4.5	-54.0	0.67	-0.64	-6.56	
1,081.0	1.51	179.55	1,078.8	-58.4	4.5	-54.6	0.35	-0.32	-5.60	
1,106.0	1.41	183.19	1,103.8	-59.0	4.5	-55.2	0.55	-0.40	14.56	
1,131.0	1.11	178.72	1,128.8	-59.6	4.5	-55.7	1.26	-1.20	-17.88	
1,156.0	1.04	180.70	1,153.8	-60.0	4.5	-56.1	0.32	-0.28	7.92	
1,181.0	0.85	180.40	1,178.8	-60.5	4.5	-56.5	0.76	-0.76	-1.20	
1,206.0	0.63	179.06	1,203.8	-60.8	4.5	-56.8	0.88	-0.88	-5.36	
1,231.0	0.65	185.54	1,228.8	-61.1	4.5	-57.0	0.30	0.08	25.92	
1,256.0	0.65	185.76	1,253.8	-61.3	4.4	-57.3	0.01	0.00	0.88	
1,281.0	0.54	189.95	1,278.8	-61.6	4.4	-57.5	0.47	-0.44	16.76	
1,306.0	0.39	183.88	1,303.8	-61.8	4.4	-57.7	0.63	-0.60	-24.28	
1,331.0	0.33	183.63	1,328.8	-62.0	4.4	-57.8	0.24	-0.24	-1.00	
1,356.0	0.32	191.73	1,353.8	-62.1	4.3	-57.9	0.19	-0.04	32.40	



Scientific Drilling International
Survey Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Caldwell Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 523: GL 1099' + KB 19 @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: GL 1099' + KB 19 @ 1118.0usft
Well:	Caldwell 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)
1,381.0	0.20	198.09	1,378.8	-62.2	4.3	-58.0	0.49	-0.48	25.44
1,406.0	0.29	206.22	1,403.8	-62.3	4.3	-58.1	0.39	0.36	32.52
1,431.0	0.21	212.95	1,428.8	-62.4	4.2	-58.1	0.34	-0.32	26.92
1,456.0	0.26	214.92	1,453.8	-62.5	4.2	-58.2	0.20	0.20	7.88
1,481.0	0.25	227.52	1,478.8	-62.6	4.1	-58.2	0.23	-0.04	50.40
1,506.0	0.27	228.57	1,503.8	-62.6	4.0	-58.3	0.08	0.08	4.20
1,531.0	0.32	244.87	1,528.8	-62.7	3.9	-58.3	0.39	0.20	65.20
1,556.0	0.30	246.01	1,553.8	-62.8	3.8	-58.3	0.08	-0.08	4.56
1,581.0	0.23	256.96	1,578.8	-62.8	3.7	-58.3	0.34	-0.28	43.80
1,606.0	0.20	254.54	1,603.8	-62.8	3.6	-58.2	0.13	-0.12	-9.68
1,631.0	0.35	221.86	1,628.8	-62.9	3.5	-58.3	0.85	0.60	-130.72
1,656.0	0.16	235.84	1,653.8	-63.0	3.4	-58.3	0.79	-0.76	55.92
1,681.0	0.25	224.85	1,678.8	-63.0	3.3	-58.3	0.39	0.36	-43.96
1,706.0	0.31	227.44	1,703.8	-63.1	3.2	-58.4	0.25	0.24	10.36
1,731.0	0.32	232.10	1,728.8	-63.2	3.1	-58.4	0.11	0.04	18.64
1,756.0	0.36	229.57	1,753.8	-63.3	3.0	-58.4	0.17	0.16	-10.12
1,781.0	0.48	253.41	1,778.8	-63.4	2.9	-58.4	0.84	0.48	95.36
1,806.0	0.50	261.94	1,803.8	-63.4	2.7	-58.4	0.30	0.08	34.12
1,831.0	0.47	259.14	1,828.8	-63.5	2.4	-58.3	0.15	-0.12	-11.20
1,856.0	0.46	269.59	1,853.8	-63.5	2.2	-58.3	0.34	-0.04	41.80
1,881.0	0.47	258.76	1,878.8	-63.5	2.0	-58.2	0.35	0.04	-43.32
1,906.0	0.48	253.62	1,903.8	-63.6	1.8	-58.1	0.18	0.04	-20.56
1,931.0	0.55	247.59	1,928.8	-63.6	1.6	-58.1	0.35	0.28	-24.12
1,956.0	0.56	247.93	1,953.8	-63.7	1.4	-58.1	0.04	0.04	1.36
1,981.0	0.63	252.84	1,978.8	-63.8	1.2	-58.1	0.35	0.28	19.64
2,006.0	0.66	256.80	2,003.8	-63.9	0.9	-58.0	0.21	0.12	15.84
2,031.0	0.49	264.63	2,028.8	-63.9	0.6	-58.0	0.75	-0.68	31.32
2,056.0	0.62	253.91	2,053.8	-64.0	0.4	-57.9	0.66	0.52	-42.88
2,081.0	0.68	263.50	2,078.8	-64.0	0.1	-57.8	0.50	0.24	38.36
2,106.0	0.55	259.83	2,103.8	-64.1	-0.1	-57.8	0.54	-0.52	-14.68
2,131.0	0.62	261.44	2,128.8	-64.1	-0.4	-57.7	0.29	0.28	6.44
2,156.0	0.53	264.34	2,153.8	-64.1	-0.6	-57.6	0.38	-0.36	11.60
2,181.0	0.51	274.07	2,178.8	-64.1	-0.9	-57.5	0.36	-0.08	38.92
2,206.0	0.48	269.00	2,203.8	-64.1	-1.1	-57.4	0.21	-0.12	-20.28
2,231.0	0.61	269.78	2,228.8	-64.1	-1.3	-57.3	0.52	0.52	3.12
2,256.0	0.58	283.32	2,253.8	-64.1	-1.6	-57.2	0.57	-0.12	54.16
2,281.0	0.55	281.66	2,278.8	-64.1	-1.8	-57.0	0.14	-0.12	-6.64
2,306.0	0.46	286.42	2,303.8	-64.0	-2.0	-56.9	0.40	-0.36	19.04
2,331.0	0.50	280.35	2,328.8	-64.0	-2.2	-56.8	0.26	0.16	-24.28
2,356.0	0.56	267.50	2,353.8	-63.9	-2.5	-56.6	0.53	0.24	-51.40
2,381.0	0.41	288.97	2,378.8	-63.9	-2.7	-56.5	0.93	-0.60	85.88
2,406.0	0.56	269.50	2,403.8	-63.9	-2.9	-56.4	0.88	0.60	-77.88
2,431.0	0.61	271.59	2,428.8	-63.9	-3.1	-56.3	0.22	0.20	8.36



Company:	Antero Resources	Local Co-ordinate Reference:	Well Caldwell Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 523: GL 1099' + KB 19 @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: GL 1099' + KB 19 @ 1118.0usft
Well:	Caldwell 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)
2,456.0	0.57	270.89	2,453.8	-63.9	-3.4	-56.2	0.16	-0.16	-2.80
2,481.0	0.54	269.97	2,478.8	-63.9	-3.6	-56.1	0.13	-0.12	-3.68
2,506.0	0.50	268.91	2,503.8	-63.9	-3.9	-56.0	0.16	-0.16	-4.24
2,531.0	0.62	282.19	2,528.8	-63.9	-4.1	-55.9	0.70	0.48	53.12
2,556.0	0.62	280.78	2,553.8	-63.8	-4.4	-55.7	0.06	0.00	-5.64
2,581.0	0.60	282.91	2,578.8	-63.7	-4.6	-55.5	0.12	-0.08	8.52
2,606.0	0.70	288.88	2,603.8	-63.7	-4.9	-55.3	0.48	0.40	23.88
2,631.0	0.60	281.97	2,628.8	-63.6	-5.2	-55.2	0.51	-0.40	-27.64
2,656.0	0.67	288.94	2,653.8	-63.5	-5.4	-55.0	0.42	0.28	27.88
2,681.0	0.62	290.94	2,678.8	-63.4	-5.7	-54.8	0.22	-0.20	8.00
2,706.0	0.60	293.63	2,703.8	-63.3	-5.9	-54.6	0.14	-0.08	10.76
2,731.0	0.61	290.75	2,728.8	-63.2	-6.2	-54.4	0.13	0.04	-11.52
2,756.0	0.60	291.25	2,753.8	-63.1	-6.4	-54.2	0.05	-0.04	2.00
2,781.0	0.61	293.45	2,778.8	-63.0	-6.7	-54.0	0.10	0.04	8.80
2,806.0	0.64	286.92	2,803.8	-62.9	-6.9	-53.8	0.31	0.12	-26.12
2,831.0	0.71	288.05	2,828.8	-62.8	-7.2	-53.6	0.29	0.28	4.52
2,856.0	0.72	282.94	2,853.8	-62.8	-7.5	-53.4	0.26	0.04	-20.44
2,881.0	0.79	283.76	2,878.8	-62.7	-7.8	-53.2	0.28	0.28	3.28
2,906.0	0.81	284.71	2,903.8	-62.6	-8.2	-53.0	0.10	0.08	3.80
2,931.0	0.81	289.67	2,928.7	-62.5	-8.5	-52.7	0.28	0.00	19.84
2,956.0	0.83	286.40	2,953.7	-62.4	-8.8	-52.5	0.20	0.08	-13.08
2,981.0	0.85	293.36	2,978.7	-62.3	-9.2	-52.2	0.42	0.08	27.84
3,006.0	0.80	288.50	3,003.7	-62.1	-9.5	-52.0	0.34	-0.20	-19.44
3,031.0	0.82	289.86	3,028.7	-62.0	-9.9	-51.7	0.11	0.08	5.44
3,056.0	0.80	291.95	3,053.7	-61.9	-10.2	-51.5	0.14	-0.08	8.36
3,081.0	0.81	295.72	3,078.7	-61.7	-10.5	-51.2	0.22	0.04	15.08
3,106.0	0.70	287.08	3,103.7	-61.6	-10.8	-51.0	0.63	-0.44	-34.56
3,131.0	0.74	285.94	3,128.7	-61.5	-11.1	-50.7	0.17	0.16	-4.56
3,156.0	0.87	286.96	3,153.7	-61.4	-11.5	-50.5	0.52	0.52	4.08
3,181.0	0.83	282.64	3,178.7	-61.3	-11.8	-50.3	0.30	-0.16	-17.28
3,206.0	0.84	286.49	3,203.7	-61.2	-12.2	-50.0	0.23	0.04	15.40
3,231.0	0.83	285.97	3,228.7	-61.1	-12.5	-49.8	0.05	-0.04	-2.08
3,256.0	0.88	290.87	3,253.7	-61.0	-12.9	-49.5	0.35	0.20	19.60
3,281.0	0.85	292.02	3,278.7	-60.9	-13.2	-49.3	0.14	-0.12	4.60
3,306.0	0.82	292.94	3,303.7	-60.8	-13.6	-49.0	0.13	-0.12	3.68
3,331.0	0.90	292.41	3,328.7	-60.6	-13.9	-48.7	0.32	0.32	-2.12
3,356.0	0.79	294.18	3,353.7	-60.5	-14.2	-48.4	0.45	-0.44	7.08
3,381.0	0.87	297.75	3,378.7	-60.3	-14.6	-48.1	0.38	0.32	14.28
3,406.0	0.84	289.98	3,403.7	-60.2	-14.9	-47.9	0.48	-0.12	-31.08
3,431.0	0.86	289.13	3,428.7	-60.0	-15.3	-47.6	0.09	0.08	-3.40
3,456.0	0.75	300.52	3,453.7	-59.9	-15.6	-47.3	0.77	-0.44	45.56
3,481.0	0.82	290.65	3,478.7	-59.7	-15.9	-47.1	0.61	0.28	-39.48
3,506.0	0.87	290.28	3,503.7	-59.6	-16.2	-46.8	0.20	0.20	-1.48
3,531.0	0.78	298.25	3,528.7	-59.5	-16.6	-46.5	0.58	-0.36	31.88



Company:	Antero Resources	Local Co-ordinate Reference:	Well Caldwell Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 523: GL 1099' + KB 19 @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: GL 1099' + KB 19 @ 1118.0usft
Well:	Caldwell 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)	
3,556.0	0.78	295.54	3,553.7	-59.3	-16.9	-46.3	0.15	0.00	-10.84	
3,581.0	0.89	286.91	3,578.7	-59.2	-17.2	-46.0	0.67	0.44	-34.52	
3,606.0	0.89	292.77	3,603.7	-59.0	-17.6	-45.7	0.36	0.00	23.44	
3,631.0	0.71	286.52	3,628.7	-58.9	-17.9	-45.5	0.80	-0.72	-25.00	
3,656.0	0.74	295.49	3,653.7	-58.8	-18.2	-45.2	0.47	0.12	35.88	
3,681.0	0.75	293.85	3,678.7	-58.7	-18.5	-45.0	0.09	0.04	-6.56	
3,706.0	0.86	287.13	3,703.7	-58.6	-18.8	-44.7	0.58	0.44	-26.88	
3,731.0	0.89	283.97	3,728.7	-58.5	-19.2	-44.5	0.23	0.12	-12.64	
3,756.0	0.76	294.42	3,753.7	-58.3	-19.5	-44.2	0.79	-0.52	41.80	
3,781.0	0.75	276.71	3,778.7	-58.2	-19.8	-44.0	0.93	-0.04	-70.84	
3,806.0	0.72	281.65	3,803.7	-58.2	-20.1	-43.8	0.28	-0.12	19.76	
3,831.0	0.71	287.79	3,828.7	-58.1	-20.4	-43.6	0.31	-0.04	24.56	
3,856.0	0.70	294.15	3,853.7	-58.0	-20.7	-43.4	0.32	-0.04	25.44	
3,881.0	0.65	297.19	3,878.7	-57.9	-21.0	-43.2	0.25	-0.20	12.16	
3,906.0	0.61	291.89	3,903.7	-57.8	-21.3	-43.0	0.28	-0.16	-21.20	
3,931.0	0.27	349.77	3,928.7	-57.7	-21.4	-42.8	2.08	-1.36	231.52	
3,956.0	0.35	65.65	3,953.7	-57.6	-21.3	-42.8	1.55	0.32	303.52	
3,981.0	0.95	69.70	3,978.7	-57.5	-21.1	-42.8	2.41	2.40	16.20	
4,006.0	1.65	80.37	4,003.6	-57.3	-20.5	-42.9	2.95	2.80	42.68	
4,031.0	2.36	83.09	4,028.6	-57.2	-19.6	-43.2	2.86	2.84	10.88	
4,056.0	2.95	86.36	4,053.6	-57.1	-18.5	-43.6	2.44	2.36	13.08	
4,081.0	4.09	86.60	4,078.6	-57.0	-17.0	-44.1	4.56	4.56	0.96	
4,106.0	4.52	88.74	4,103.5	-56.9	-15.1	-44.9	1.84	1.72	8.56	
4,131.0	5.44	87.71	4,128.4	-56.9	-12.9	-45.8	3.70	3.68	-4.12	
4,156.0	6.30	86.02	4,153.3	-56.7	-10.4	-46.7	3.51	3.44	-6.76	
4,181.0	7.31	84.72	4,178.1	-56.5	-7.4	-47.8	4.09	4.04	-5.20	
4,206.0	7.40	86.62	4,202.9	-56.2	-4.2	-48.9	1.04	0.36	7.60	
4,231.0	7.96	87.43	4,227.7	-56.1	-0.9	-50.2	2.28	2.24	3.24	
4,256.0	8.66	87.81	4,252.4	-55.9	2.7	-51.6	2.81	2.80	1.52	
4,281.0	9.63	88.29	4,277.1	-55.8	6.7	-53.2	3.89	3.88	1.92	
4,306.0	10.21	90.16	4,301.7	-55.7	11.0	-55.0	2.65	2.32	7.48	
4,331.0	11.02	91.81	4,326.3	-55.8	15.6	-57.1	3.46	3.24	6.60	
4,356.0	11.66	92.21	4,350.8	-56.0	20.5	-59.4	2.58	2.56	1.60	
4,381.0	12.74	92.22	4,375.2	-56.2	25.8	-61.8	4.32	4.32	0.04	
4,406.0	12.86	93.67	4,399.6	-56.5	31.3	-64.5	1.37	0.48	5.80	
4,431.0	13.56	93.63	4,423.9	-56.8	37.0	-67.3	2.80	2.80	-0.16	
4,456.0	13.41	95.70	4,448.2	-57.3	42.8	-70.2	2.02	-0.60	8.28	
4,481.0	13.86	95.47	4,472.5	-57.9	48.7	-73.2	1.81	1.80	-0.92	
4,506.0	14.26	95.06	4,496.8	-58.4	54.8	-76.3	1.65	1.60	-1.64	
4,531.0	14.76	95.17	4,521.0	-59.0	61.0	-79.5	2.00	2.00	0.44	
4,556.0	15.14	95.40	4,545.1	-59.6	67.4	-82.8	1.54	1.52	0.92	
4,581.0	15.74	95.49	4,569.2	-60.2	74.0	-86.3	2.40	2.40	0.36	
4,606.0	16.34	95.27	4,593.3	-60.9	80.9	-89.8	2.41	2.40	-0.88	



Company:	Antero Resources	Local Co-ordinate Reference:	Well Caldwell Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 523: GL 1099' + KB 19 @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: GL 1099' + KB 19 @ 1118.0usft
Well:	Caldwell 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)
4,631.0	17.20	93.68	4,617.2	-61.4	88.1	-93.4	3.90	3.44	-6.36
4,656.0	17.81	93.57	4,641.0	-61.9	95.6	-97.1	2.44	2.44	-0.44
4,681.0	18.30	93.82	4,664.8	-62.4	103.3	-100.8	1.98	1.96	1.00
4,706.0	18.96	93.90	4,688.5	-63.0	111.3	-104.8	2.64	2.64	0.32
4,731.0	19.04	93.69	4,712.1	-63.5	119.4	-108.8	0.42	0.32	-0.84
4,756.0	19.42	93.68	4,735.8	-64.0	127.7	-112.8	1.52	1.52	-0.04
4,781.0	19.61	93.10	4,759.3	-64.5	136.0	-116.8	1.09	0.76	-2.32
4,806.0	19.91	92.58	4,782.8	-64.9	144.4	-120.8	1.39	1.20	-2.08
4,831.0	20.36	91.72	4,806.3	-65.3	153.0	-124.8	2.15	1.80	-3.44
4,856.0	20.59	91.27	4,829.7	-65.5	161.8	-128.8	1.11	0.92	-1.80
4,881.0	21.10	90.58	4,853.1	-65.6	170.7	-132.7	2.26	2.04	-2.76
4,906.0	21.56	89.96	4,876.4	-65.7	179.8	-136.7	2.05	1.84	-2.48
4,931.0	22.34	89.41	4,899.6	-65.6	189.1	-140.7	3.23	3.12	-2.20
4,956.0	22.76	88.45	4,922.7	-65.4	198.7	-144.7	2.23	1.68	-3.84
4,981.0	23.44	87.49	4,945.7	-65.1	208.5	-148.6	3.11	2.72	-3.84
5,006.0	24.30	86.50	4,968.5	-64.6	218.6	-152.4	3.79	3.44	-3.96
5,031.0	24.93	86.04	4,991.2	-63.9	229.0	-156.3	2.63	2.52	-1.84
5,056.0	25.60	85.20	5,013.9	-63.1	239.6	-160.1	3.04	2.68	-3.36
5,081.0	26.06	84.44	5,036.4	-62.1	250.5	-163.9	2.27	1.84	-3.04
5,106.0	26.54	83.82	5,058.8	-60.9	261.5	-167.7	2.21	1.92	-2.48
5,131.0	26.46	83.16	5,081.1	-59.7	272.6	-171.3	1.22	-0.32	-2.64
5,156.0	27.06	83.39	5,103.5	-58.4	283.7	-174.9	2.44	2.40	0.92
5,181.0	26.33	83.88	5,125.8	-57.1	294.9	-178.6	3.05	-2.92	1.96
5,206.0	26.48	83.75	5,148.2	-55.9	306.0	-182.3	0.64	0.60	-0.52
5,231.0	26.60	83.98	5,170.6	-54.7	317.1	-186.0	0.63	0.48	0.92
5,256.0	26.32	84.84	5,192.9	-53.6	328.2	-189.8	1.90	-1.12	3.44
5,281.0	26.31	83.79	5,215.3	-52.5	339.2	-193.5	1.86	-0.04	-4.20
5,306.0	27.18	83.98	5,237.7	-51.3	350.4	-197.3	3.50	3.48	0.76
5,331.0	27.14	83.84	5,259.9	-50.1	361.7	-201.1	0.30	-0.16	-0.56
5,356.0	27.36	83.79	5,282.1	-48.9	373.1	-204.9	0.88	0.88	-0.20
5,381.0	27.62	83.51	5,304.3	-47.6	384.6	-208.7	1.16	1.04	-1.12
5,406.0	27.54	83.44	5,326.5	-46.3	396.1	-212.4	0.35	-0.32	-0.28
5,431.0	27.57	83.01	5,348.6	-44.9	407.6	-216.1	0.80	0.12	-1.72
5,456.0	27.48	82.62	5,370.8	-43.5	419.0	-219.8	0.81	-0.36	-1.56
5,481.0	27.19	82.11	5,393.0	-42.0	430.4	-223.3	1.49	-1.16	-2.04
5,506.0	26.49	81.87	5,415.3	-40.4	441.6	-226.7	2.83	-2.80	-0.96
5,531.0	26.44	82.01	5,437.7	-38.8	452.6	-230.0	0.32	-0.20	0.56
5,556.0	26.26	82.35	5,460.1	-37.3	463.6	-233.4	0.94	-0.72	1.36
5,581.0	26.27	82.54	5,482.5	-35.9	474.6	-236.8	0.34	0.04	0.76
5,606.0	26.30	82.90	5,504.9	-34.5	485.5	-240.3	0.65	0.12	1.44
5,631.0	25.94	83.26	5,527.4	-33.1	496.5	-243.8	1.57	-1.44	1.44
5,656.0	25.86	83.78	5,549.9	-31.9	507.3	-247.4	0.96	-0.32	2.08
5,681.0	25.59	84.42	5,572.4	-30.8	518.1	-251.0	1.55	-1.08	2.56



Scientific Drilling International
Survey Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Caldwell Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 523: GL 1099' + KB 19 @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: GL 1099' + KB 19 @ 1118.0usft
Well:	Caldwell 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)	
5,706.0	26.12	85.31	5,594.9	-29.8	529.0	-254.8	2.63	2.12	3.56	
5,731.0	25.85	85.77	5,617.4	-29.0	539.9	-258.7	1.35	-1.08	1.84	
5,756.0	25.77	86.88	5,639.9	-28.3	550.8	-262.8	1.96	-0.32	4.44	
5,781.0	25.52	87.66	5,662.4	-27.8	561.6	-267.0	1.68	-1.00	3.12	
5,806.0	26.67	88.13	5,684.9	-27.4	572.5	-271.4	4.67	4.60	1.88	
5,831.0	26.41	88.50	5,707.2	-27.0	583.7	-275.9	1.23	-1.04	1.48	
5,856.0	25.76	88.62	5,729.7	-26.7	594.7	-280.4	2.61	-2.60	0.48	
5,881.0	25.73	88.47	5,752.2	-26.5	605.6	-284.8	0.29	-0.12	-0.60	
5,906.0	25.89	88.23	5,774.7	-26.2	616.4	-289.2	0.76	0.64	-0.96	
5,931.0	26.24	87.34	5,797.2	-25.7	627.4	-293.5	2.10	1.40	-3.56	
5,956.0	26.12	86.74	5,819.6	-25.2	638.4	-297.8	1.16	-0.48	-2.40	
5,971.0	26.22	86.54	5,833.1	-24.8	645.0	-300.3	0.89	0.67	-1.33	
Last SDI Gyro @ 5971										
6,011.0	25.75	85.01	5,869.0	-23.5	662.5	-306.6	2.05	-1.18	-3.83	
First SDI MWD @ 6011										
6,041.0	25.36	84.24	5,896.1	-22.3	675.4	-311.1	1.71	-1.30	-2.57	
6,071.0	25.29	84.47	5,923.2	-21.0	688.2	-315.4	0.40	-0.23	0.77	
6,100.0	25.27	84.91	5,949.4	-19.9	700.5	-319.7	0.65	-0.07	1.52	
6,130.0	25.28	84.86	5,976.6	-18.7	713.3	-324.2	0.08	0.03	-0.17	
6,160.0	25.36	84.59	6,003.7	-17.5	726.0	-328.6	0.47	0.27	-0.90	
6,190.0	25.05	82.02	6,030.8	-16.1	738.7	-332.7	3.79	-1.03	-8.57	
6,220.0	24.53	71.86	6,058.1	-13.2	750.9	-335.5	14.29	-1.73	-33.87	
6,251.0	25.05	60.89	6,086.2	-8.0	762.8	-335.9	14.91	1.68	-35.39	
6,279.0	25.93	52.67	6,111.5	-1.4	772.8	-334.3	13.01	3.14	-29.36	
6,309.0	27.43	47.55	6,138.3	7.2	783.2	-330.9	9.15	5.00	-17.07	
6,339.0	27.51	44.33	6,164.9	16.8	793.1	-326.5	4.96	0.27	-10.73	
6,369.0	27.84	37.68	6,191.5	27.3	802.2	-321.0	10.35	1.10	-22.17	
6,387.0	28.09	34.24	6,207.4	34.2	807.2	-316.9	9.08	1.41	-19.12	
Sycamore @ 6387										
6,399.0	28.31	31.98	6,218.0	38.9	810.3	-314.0	9.08	1.80	-18.82	
6,429.0	29.12	26.11	6,244.3	51.5	817.3	-305.6	9.78	2.70	-19.57	
6,459.0	31.00	20.53	6,270.3	65.3	823.2	-295.7	11.22	6.27	-18.60	
6,489.0	33.85	17.03	6,295.6	80.5	828.3	-284.2	11.37	9.50	-11.67	
6,519.0	36.57	14.09	6,320.1	97.2	833.0	-271.2	10.68	9.07	-9.80	
6,548.0	39.46	11.94	6,342.9	114.6	837.0	-257.2	10.96	9.97	-7.41	
6,578.0	42.44	10.66	6,365.6	133.9	840.8	-241.4	10.32	9.93	-4.27	
6,581.0	42.78	10.43	6,367.8	135.9	841.2	-239.8	12.56	11.44	-7.69	
Middlesex @ 6581										
6,608.0	45.89	8.48	6,387.1	154.5	844.3	-224.3	12.56	11.51	-7.22	
6,638.0	49.49	5.97	6,407.3	176.5	847.0	-205.7	13.50	12.00	-8.37	
6,668.0	52.64	3.51	6,426.2	199.7	849.0	-185.5	12.28	10.50	-8.20	
6,698.0	55.98	0.35	6,443.7	224.1	849.8	-163.9	14.04	11.13	-10.53	
6,727.0	58.56	356.82	6,459.4	248.4	849.2	-141.6	13.56	8.90	-12.17	
6,757.0	61.87	352.54	6,474.3	274.4	846.7	-117.2	16.58	11.03	-14.27	



Scientific Drilling International
Survey Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Caldwell Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 523: GL 1099' + KB 19 @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: GL 1099' + KB 19 @ 1118.0usft
Well:	Caldwell 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)	
6,758.0	61.95	352.46	6,474.7	275.2	846.6	-116.4	10.20	7.54	-7.79	
Burkett @ 6758										
6,787.0	64.15	350.25	6,487.9	300.8	842.7	-91.6	10.20	7.60	-7.63	
6,817.0	65.05	347.01	6,500.7	327.3	837.4	-65.4	10.21	3.00	-10.80	
6,826.0	65.72	346.06	6,504.5	335.3	835.5	-57.4	12.18	7.49	-10.56	
Tully @ 6826										
6,847.0	67.32	343.88	6,512.9	353.9	830.5	-38.4	12.18	7.60	-10.38	
6,877.0	69.63	341.80	6,523.9	380.6	822.2	-10.8	10.04	7.70	-6.93	
6,888.0	70.86	340.99	6,527.6	390.4	818.9	-0.5	13.13	11.15	-7.36	
MRCL_HOT @ 6888										
6,906.0	72.87	339.69	6,533.2	406.5	813.2	16.5	13.13	11.19	-7.22	
6,936.0	77.18	339.69	6,540.9	433.7	803.1	45.3	14.37	14.37	0.00	
6,966.0	81.25	339.88	6,546.6	461.3	792.9	74.7	13.58	13.57	0.63	
6,998.0	84.96	339.88	6,550.4	491.1	782.0	106.3	11.59	11.59	0.00	
7,036.0	89.13	340.24	6,552.4	526.8	769.1	144.1	11.01	10.97	0.95	
7,066.0	90.30	339.75	6,552.5	555.0	758.8	173.9	4.23	3.90	-1.63	
7,088.0	91.54	339.38	6,552.1	575.6	751.1	195.8	5.88	5.64	-1.68	
7,175.0	93.56	334.88	6,548.3	655.7	717.4	282.6	5.66	2.32	-5.17	
7,265.0	91.88	333.40	6,544.0	736.5	678.2	372.5	2.49	-1.87	-1.64	
7,354.0	90.87	333.36	6,541.9	816.1	638.3	461.5	1.14	-1.13	-0.04	
7,444.0	90.81	333.01	6,540.5	896.4	597.7	551.4	0.39	-0.07	-0.39	
7,533.0	90.82	333.23	6,539.3	975.8	557.5	640.4	0.25	0.01	0.25	
7,623.0	91.11	335.23	6,537.8	1,056.8	518.3	730.4	2.25	0.32	2.22	
7,712.0	91.25	335.52	6,535.9	1,137.7	481.3	819.4	0.36	0.16	0.33	
7,802.0	91.38	335.55	6,533.9	1,219.6	444.0	909.3	0.15	0.14	0.03	
7,892.0	90.38	333.49	6,532.5	1,300.8	405.3	999.3	2.54	-1.11	-2.29	
7,981.0	90.21	333.14	6,532.0	1,380.3	365.3	1,088.3	0.44	-0.19	-0.39	
8,071.0	90.45	332.96	6,531.5	1,460.6	324.5	1,178.3	0.33	0.27	-0.20	
8,161.0	90.65	333.33	6,530.6	1,540.9	283.9	1,268.2	0.47	0.22	0.41	
8,250.0	90.65	332.76	6,529.6	1,620.2	243.5	1,357.2	0.64	0.00	-0.64	
8,340.0	91.93	335.15	6,527.6	1,701.0	204.0	1,447.2	3.01	1.42	2.66	
8,429.0	92.44	335.81	6,524.2	1,781.9	167.1	1,536.1	0.94	0.57	0.74	
8,519.0	91.67	335.44	6,521.0	1,863.9	130.0	1,626.0	0.95	-0.86	-0.41	
8,608.0	91.06	335.16	6,518.9	1,944.7	92.8	1,715.0	0.75	-0.69	-0.31	
8,698.0	91.09	335.07	6,517.2	2,026.3	55.0	1,804.9	0.11	0.03	-0.10	
8,787.0	91.06	333.42	6,515.5	2,106.5	16.3	1,893.9	1.85	-0.03	-1.85	
8,877.0	91.23	333.51	6,513.7	2,187.0	-23.9	1,983.9	0.21	0.19	0.10	
8,966.0	91.10	333.01	6,511.9	2,266.4	-63.9	2,072.9	0.58	-0.15	-0.56	
9,056.0	91.03	335.54	6,510.2	2,347.5	-103.0	2,162.8	2.81	-0.08	2.81	
9,145.0	91.30	335.25	6,508.4	2,428.4	-140.0	2,251.8	0.45	0.30	-0.33	
9,235.0	91.23	334.97	6,506.4	2,510.0	-177.9	2,341.8	0.32	-0.08	-0.31	
9,325.0	91.06	334.46	6,504.6	2,591.4	-216.3	2,431.8	0.60	-0.19	-0.57	
9,414.0	90.79	334.02	6,503.2	2,671.5	-255.0	2,520.7	0.58	-0.30	-0.49	
9,503.0	90.66	333.97	6,502.1	2,751.5	-294.0	2,609.7	0.16	-0.15	-0.06	



Scientific Drilling International
Survey Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Caldwell Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 523: GL 1099' + KB 19 @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: GL 1099' + KB 19 @ 1118.0usft
Well:	Caldwell 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)
9,593.0	90.46	333.82	6,501.2	2,832.3	-333.6	2,699.7	0.28	-0.22	-0.17
9,683.0	91.80	335.48	6,499.4	2,913.6	-372.2	2,789.7	2.37	1.49	1.84
9,772.0	92.27	335.01	6,496.3	2,994.4	-409.4	2,878.6	0.75	0.53	-0.53
9,862.0	91.44	336.24	6,493.3	3,076.3	-446.5	2,968.6	1.65	-0.92	1.37
9,951.0	90.19	333.89	6,492.1	3,157.0	-484.0	3,057.5	2.99	-1.40	-2.64
10,041.0	91.27	334.15	6,490.9	3,237.9	-523.5	3,147.5	1.23	1.20	0.29
10,130.0	90.33	333.96	6,489.7	3,317.9	-562.4	3,236.5	1.08	-1.06	-0.21
10,220.0	91.03	334.65	6,488.6	3,399.0	-601.4	3,326.5	1.09	0.78	0.77
10,309.0	91.37	334.60	6,486.8	3,479.4	-639.5	3,415.5	0.39	0.38	-0.06
10,399.0	91.37	334.73	6,484.6	3,560.8	-678.0	3,505.5	0.14	0.00	0.14
10,488.0	91.34	334.66	6,482.5	3,641.2	-716.1	3,594.4	0.09	-0.03	-0.08
10,578.0	89.99	334.41	6,481.5	3,722.4	-754.8	3,684.4	1.53	-1.50	-0.28
10,668.0	89.83	334.30	6,481.6	3,803.6	-793.7	3,774.4	0.22	-0.18	-0.12
10,757.0	90.13	334.80	6,481.6	3,883.9	-832.0	3,863.4	0.66	0.34	0.56
10,846.0	89.59	334.30	6,481.8	3,964.3	-870.2	3,952.4	0.83	-0.61	-0.56
10,936.0	90.83	334.34	6,481.5	4,045.4	-909.2	4,042.4	1.38	1.38	0.04
11,025.0	90.53	334.15	6,480.5	4,125.6	-947.9	4,131.4	0.40	-0.34	-0.21
11,115.0	90.53	333.89	6,479.6	4,206.5	-987.3	4,221.4	0.29	0.00	-0.29
11,205.0	90.60	333.54	6,478.7	4,287.2	-1,027.2	4,311.4	0.40	0.08	-0.39
11,294.0	90.73	333.45	6,477.7	4,366.8	-1,066.9	4,400.4	0.18	0.15	-0.10
11,384.0	91.24	335.44	6,476.2	4,448.0	-1,105.7	4,490.4	2.28	0.57	2.21
11,473.0	90.77	334.84	6,474.6	4,528.7	-1,143.1	4,579.3	0.86	-0.53	-0.67
11,563.0	90.16	334.76	6,473.9	4,610.1	-1,181.4	4,669.3	0.68	-0.68	-0.09
11,652.0	89.79	334.46	6,473.9	4,690.5	-1,219.6	4,758.3	0.54	-0.42	-0.34
11,742.0	90.60	334.84	6,473.6	4,771.9	-1,258.1	4,848.3	0.99	0.90	0.42
11,831.0	90.36	334.69	6,472.9	4,852.4	-1,296.1	4,937.3	0.32	-0.27	-0.17
11,920.0	90.36	334.98	6,472.3	4,932.9	-1,333.9	5,026.3	0.33	0.00	0.33
12,010.0	90.53	334.94	6,471.6	5,014.5	-1,372.0	5,116.3	0.19	0.19	-0.04
12,099.0	90.80	335.10	6,470.6	5,095.1	-1,409.6	5,205.3	0.35	0.30	0.18
12,189.0	91.17	335.67	6,469.0	5,176.9	-1,447.0	5,295.3	0.75	0.41	0.63
12,278.0	90.63	335.01	6,467.6	5,257.8	-1,484.2	5,384.3	0.96	-0.61	-0.74
12,368.0	89.63	334.06	6,467.4	5,339.1	-1,522.9	5,474.3	1.53	-1.11	-1.06
12,458.0	89.12	333.85	6,468.4	5,419.9	-1,562.4	5,564.3	0.61	-0.57	-0.23
12,547.0	90.47	334.12	6,468.7	5,499.9	-1,601.4	5,653.2	1.55	1.52	0.30
12,637.0	90.73	334.27	6,467.8	5,580.9	-1,640.6	5,743.2	0.33	0.29	0.17
12,726.0	90.87	333.84	6,466.5	5,661.0	-1,679.5	5,832.2	0.51	0.16	-0.48
12,816.0	90.47	333.42	6,465.5	5,741.6	-1,719.5	5,922.2	0.64	-0.44	-0.47
12,905.0	90.33	332.90	6,464.9	5,821.0	-1,759.7	6,011.2	0.61	-0.16	-0.58
12,995.0	90.60	332.75	6,464.1	5,901.1	-1,800.8	6,101.1	0.34	0.30	-0.17
13,084.0	90.57	335.63	6,463.2	5,981.2	-1,839.5	6,190.1	3.24	-0.03	3.24
13,174.0	90.53	335.17	6,462.4	6,063.0	-1,877.0	6,280.1	0.51	-0.04	-0.51
13,263.0	90.50	334.27	6,461.6	6,143.5	-1,915.0	6,369.1	1.01	-0.03	-1.01
13,353.0	90.67	333.46	6,460.6	6,224.3	-1,954.6	6,459.1	0.92	0.19	-0.90
13,442.0	91.10	335.16	6,459.3	6,304.4	-1,993.2	6,548.1	1.97	0.48	1.91



Scientific Drilling International

Survey Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Caldwell Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 523: GL 1099' + KB 19 @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: GL 1099' + KB 19 @ 1118.0usft
Well:	Caldwell 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)
13,532.0	90.10	334.63	6,458.3	6,385.9	-2,031.4	6,638.1	1.26	-1.11	-0.59
13,621.0	89.96	333.73	6,458.3	6,466.1	-2,070.2	6,727.1	1.02	-0.16	-1.01
13,711.0	91.04	334.82	6,457.5	6,547.1	-2,109.2	6,817.1	1.70	1.20	1.21
13,800.0	90.87	334.57	6,456.0	6,627.6	-2,147.3	6,906.1	0.34	-0.19	-0.28
13,890.0	91.00	334.04	6,454.5	6,708.7	-2,186.3	6,996.0	0.61	0.14	-0.59
13,979.0	90.60	334.37	6,453.3	6,788.8	-2,225.0	7,085.0	0.58	-0.45	0.37
14,069.0	90.36	334.46	6,452.5	6,870.0	-2,263.9	7,175.0	0.28	-0.27	0.10
14,158.0	90.20	334.00	6,452.1	6,950.1	-2,302.6	7,264.0	0.55	-0.18	-0.52
14,248.0	89.73	334.49	6,452.2	7,031.2	-2,341.7	7,354.0	0.75	-0.52	0.54
14,338.0	91.24	335.29	6,451.4	7,112.7	-2,379.9	7,444.0	1.90	1.68	0.89
14,427.0	91.37	335.04	6,449.4	7,193.4	-2,417.2	7,533.0	0.32	0.15	-0.28
14,517.0	91.34	334.82	6,447.2	7,274.9	-2,455.4	7,623.0	0.25	-0.03	-0.24
14,606.0	91.44	334.78	6,445.1	7,355.4	-2,493.2	7,711.9	0.12	0.11	-0.04
14,695.0	90.13	334.73	6,443.9	7,435.9	-2,531.2	7,800.9	1.47	-1.47	-0.06
14,785.0	89.39	334.20	6,444.2	7,517.1	-2,570.0	7,890.9	1.01	-0.82	-0.59
14,874.0	90.30	334.20	6,444.5	7,597.2	-2,608.7	7,979.9	1.02	1.02	0.00
14,964.0	90.03	334.11	6,444.2	7,678.2	-2,648.0	8,069.9	0.32	-0.30	-0.10
15,053.0	89.73	334.09	6,444.4	7,758.3	-2,686.8	8,158.9	0.34	-0.34	-0.02
15,143.0	90.00	334.47	6,444.6	7,839.4	-2,725.9	8,248.9	0.52	0.30	0.42
15,232.0	91.31	335.45	6,443.6	7,920.0	-2,763.6	8,337.9	1.84	1.47	1.10
15,322.0	91.31	335.03	6,441.5	8,001.7	-2,801.2	8,427.9	0.47	0.00	-0.47
15,411.0	91.31	335.20	6,439.5	8,082.4	-2,838.7	8,516.8	0.19	0.00	0.19
15,501.0	90.90	334.58	6,437.8	8,163.9	-2,876.9	8,606.8	0.83	-0.46	-0.69
15,590.0	88.89	333.74	6,437.9	8,244.0	-2,915.7	8,696.8	2.45	-2.26	-0.94
15,680.0	89.79	335.57	6,439.0	8,325.3	-2,954.2	8,785.8	2.27	1.00	2.03
15,769.0	89.79	335.28	6,439.3	8,406.3	-2,991.2	8,874.8	0.33	0.00	-0.33
15,858.0	90.10	335.04	6,439.4	8,487.0	-3,028.6	8,963.8	0.44	0.35	-0.27
15,948.0	90.10	335.10	6,439.2	8,568.6	-3,066.5	9,053.8	0.07	0.00	0.07
16,038.0	90.10	334.46	6,439.1	8,650.1	-3,104.9	9,143.8	0.71	0.00	-0.71
16,127.0	90.30	333.83	6,438.8	8,730.2	-3,143.7	9,232.8	0.74	0.22	-0.71
16,217.0	90.27	333.82	6,438.3	8,810.9	-3,183.4	9,322.8	0.04	-0.03	-0.01
16,306.0	90.13	333.47	6,438.0	8,890.7	-3,222.9	9,411.8	0.42	-0.16	-0.39
16,396.0	90.23	332.96	6,437.7	8,971.0	-3,263.4	9,501.7	0.58	0.11	-0.57
16,486.0	90.50	332.94	6,437.1	9,051.2	-3,304.4	9,591.7	0.30	0.30	-0.02
16,575.0	91.17	335.17	6,435.8	9,131.2	-3,343.3	9,680.7	2.62	0.75	2.51
16,664.0	91.21	334.99	6,434.0	9,211.9	-3,380.8	9,769.7	0.21	0.04	-0.20
16,754.0	91.21	334.94	6,432.1	9,293.4	-3,418.9	9,859.6	0.06	0.00	-0.06
16,843.0	89.96	334.63	6,431.2	9,373.9	-3,456.8	9,948.6	1.45	-1.40	-0.35
16,933.0	90.40	334.47	6,430.9	9,455.2	-3,495.5	10,038.6	0.52	0.49	-0.18
17,022.0	87.92	333.49	6,432.2	9,535.1	-3,534.5	10,127.6	3.00	-2.79	-1.10
17,112.0	87.85	333.24	6,435.5	9,615.5	-3,574.8	10,217.5	0.29	-0.08	-0.28
17,201.0	89.63	333.53	6,437.5	9,695.1	-3,614.7	10,306.5	2.03	2.00	0.33
17,210.0	90.03	334.19	6,437.5	9,703.2	-3,618.6	10,315.5	8.57	4.44	7.33



Company:	Antero Resources	Local Co-ordinate Reference:	Well Caldwell Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 523: GL 1099' + KB 19 @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: GL 1099' + KB 19 @ 1118.0usft
Well:	Caldwell 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)
Last SDI MWD @ 17210									
17,273.0	90.03	334.19	6,437.5	9,759.9	-3,646.1	10,378.5	0.00	0.00	0.00
Projection To Bit @ 17273 MD / 6437 TVD									

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
6,387.0	6,207.4	Sycamore @ 6387		0.00		
6,581.0	6,367.8	Middlesex @ 6581		0.00		
6,758.0	6,474.7	Burkett @ 6758		0.00		
6,826.0	6,504.5	Tully @ 6826		0.00		
6,888.0	6,527.6	MRCL_HOT @ 6888		0.00		

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
5,971.0	5,833.1	-24.8	645.0	Last SDI Gyro @ 5971	
6,011.0	5,869.0	-23.5	662.5	First SDI MWD @ 6011	
17,210.0	6,437.5	9,703.2	-3,618.6	Last SDI MWD @ 17210	
17,273.0	6,437.5	9,759.9	-3,646.1	Projection To Bit @ 17273 MD / 6437 TVD	

Checked By: _____ Approved By: _____ Date: _____