



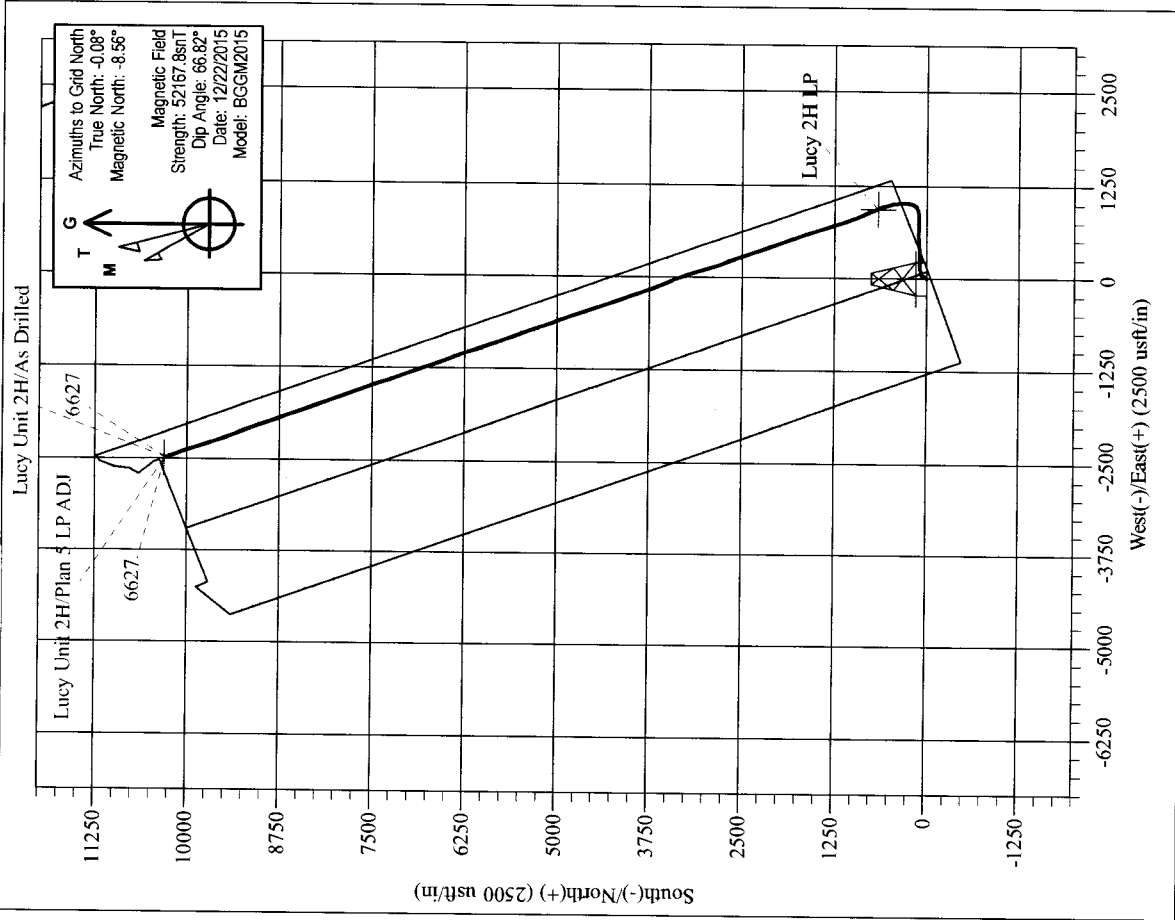
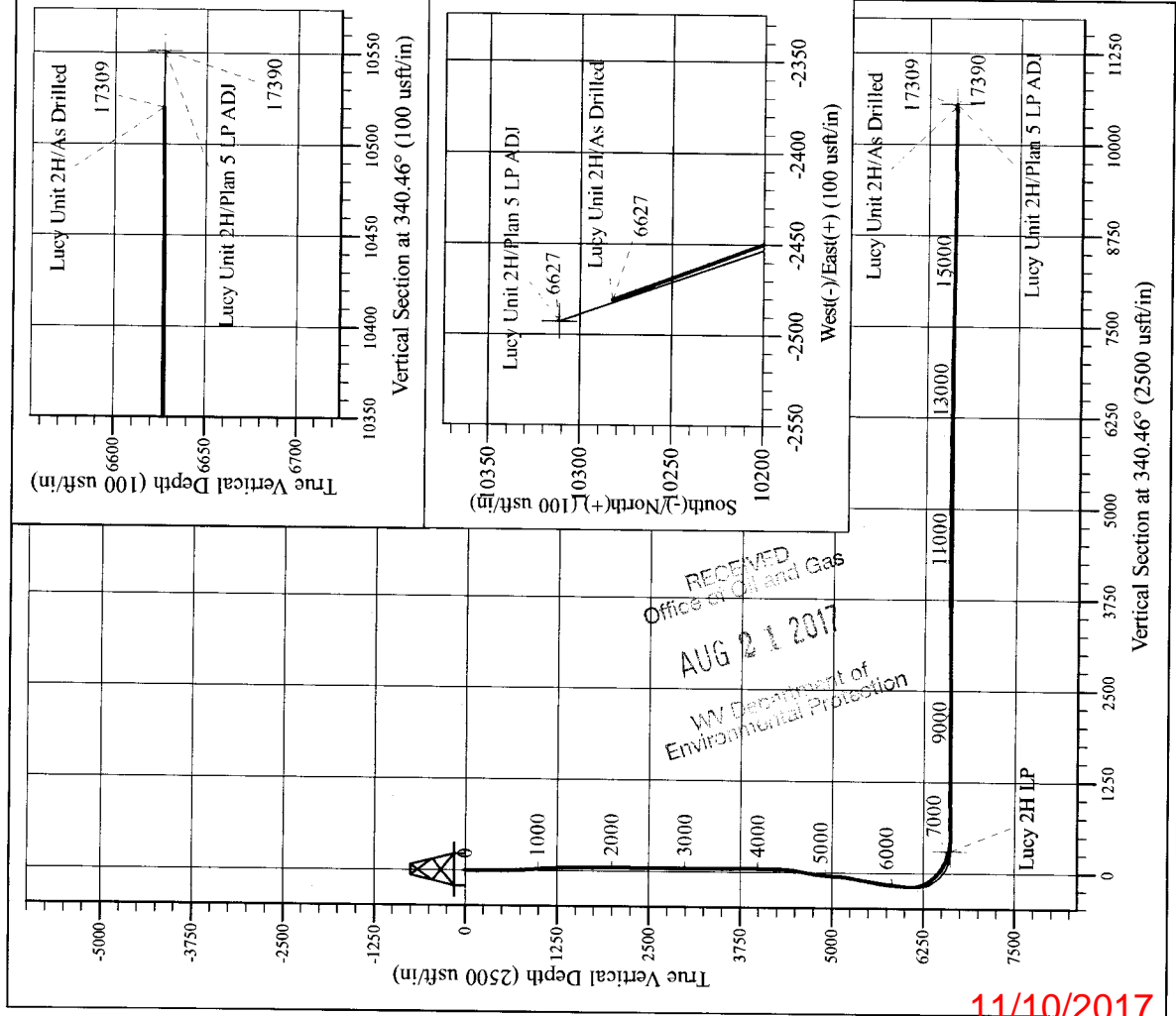
Estlack Pad: Hare/Jujabee/Lucy/Matthews/Melvin
 Lucy Unit 2H
 Plan 5 LP ADJ
 Frontier 32: 1141' GL+ 32' KB @ 1173.0usft
 Tyler County WV

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



WELL DETAILS: Lucy Unit 2H SHL

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	14312858.39	1674789.19	39° 24' 52.006 N	80° 52' 41.879 W



Lucy Unit 2H
 Approx. BHL
 39° 26' 33.705 N 80° 53' 13.335 W

Shane Rhodes
 13:44, December 28 2015
 Scientific Drilling International
 124 Vista Drive
 Charleroi, PA 15022

11/10/2017



Scientific Drilling International
Survey Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Lucy Unit 2H
Project:	Tyler County WV	TVD Reference:	Frontier 32: 1141' GL + 32' KB @ 1173.0usft
Site:	Estlack Pad: Hare/Jujubee/Lucy/Matthews/Melvin	MD Reference:	Frontier 32: 1141' GL + 32' KB @ 1173.0usft
Well:	Lucy Unit 2H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

Project	Tyler County WV, Tyler Co West Virginia		
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	Estlack Pad: Hare/Jujubee/Lucy/Matthews/Melvin, Site Center: Hare Unit 1H, Lucy 2H		
Site Position:	Northing:	14,312,858.39 usft	Latitude: 39° 24' 52.006 N
From: Map	Easting:	1,674,789.19 usft	Longitude: 80° 52' 41.879 W
Position Uncertainty:	0.0 usft	Slot Radius: 13-3/16 "	Grid Convergence: 0.08 °

Well	Lucy Unit 2H, Marcellus		
Well Position	+N/-S 0.0 usft	Northing: 14,312,858.39 usft	Latitude: 39° 24' 52.006 N
	+E/-W 0.0 usft	Easting: 1,674,789.19 usft	Longitude: 80° 52' 41.879 W
Position Uncertainty	2.0 usft	Wellhead Elevation: 1,173.0 usft	Ground Level: 1,141.0 usft

Wellbore	Original Wellpath				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2015	11/22/2015	-8.48	66.83	52,177
	BGGM2015	12/22/2015	-8.49	66.82	52,168

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	340.46	

Survey Program	Date	12/28/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
25.0	6,037.0	Survey #6 - Def Final Gyro (Original Wellp	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4	
6,127.0	17,309.0	Survey #7 Def Final MWD (Original Wellpa	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1	

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	
25.0	0.10	73.55	25.0	0.0	0.0	0.0	0.40	0.40	0.00	
First Gyro @ 25										
50.0	0.21	73.55	50.0	0.0	0.1	0.0	0.44	0.44	0.00	
75.0	0.31	73.55	75.0	0.1	0.2	0.0	0.40	0.40	0.00	
100.0	0.41	73.60	100.0	0.1	0.3	0.0	0.40	0.40	0.20	
125.0	0.39	80.63	125.0	0.1	0.5	0.0	0.21	-0.08	28.12	
150.0	0.38	88.14	150.0	0.2	0.7	-0.1	0.21	-0.04	30.04	

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Survey Report



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Project: Tyler County WV
Site: Estlack Pad:
 Hare/Jujubee/Lucy/Matthews/Melvin
Well: Lucy Unit 2H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Lucy Unit 2H
TVD Reference: Frontier 32: 1141' GL + 32' KB @ 1173.0usft
MD Reference: Frontier 32: 1141' GL + 32' KB @ 1173.0usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)
175.0	0.38	95.91	175.0	0.2	0.8	-0.1	0.21	0.00	31.08
200.0	0.39	103.65	200.0	0.1	1.0	-0.2	0.21	0.04	30.96
225.0	0.33	102.44	225.0	0.1	1.2	-0.3	0.24	-0.24	-4.84
250.0	0.27	99.49	250.0	0.1	1.3	-0.4	0.25	-0.24	-11.80
275.0	0.21	94.90	275.0	0.0	1.4	-0.4	0.25	-0.24	-18.36
300.0	0.16	86.89	300.0	0.0	1.5	-0.5	0.22	-0.20	-32.04
325.0	0.15	78.28	325.0	0.1	1.5	-0.5	0.10	-0.04	-34.44
350.0	0.16	70.68	350.0	0.1	1.6	-0.5	0.09	0.04	-30.40
375.0	0.17	63.77	375.0	0.1	1.7	-0.5	0.09	0.04	-27.64
400.0	0.18	57.27	400.0	0.1	1.7	-0.5	0.09	0.04	-26.00
425.0	0.42	48.04	425.0	0.2	1.8	-0.4	0.98	0.96	-36.92
450.0	0.67	45.54	450.0	0.4	2.0	-0.3	1.00	1.00	-10.00
475.0	0.91	44.39	475.0	0.6	2.3	-0.2	0.96	0.96	-4.60
500.0	1.16	43.72	500.0	1.0	2.6	0.0	1.00	1.00	-2.68
525.0	1.61	43.54	525.0	1.4	3.0	0.3	1.80	1.80	-0.72
550.0	2.07	43.46	550.0	2.0	3.5	0.7	1.84	1.84	-0.32
575.0	2.54	43.40	574.9	2.7	4.2	1.1	1.88	1.88	-0.24
600.0	3.00	43.37	599.9	3.6	5.1	1.7	1.84	1.84	-0.12
625.0	3.56	43.22	624.9	4.6	6.0	2.3	2.24	2.24	-0.60
650.0	4.13	43.10	649.8	5.8	7.2	3.1	2.28	2.28	-0.48
675.0	4.71	43.02	674.7	7.3	8.5	4.0	2.32	2.32	-0.32
700.0	5.28	42.95	699.7	8.8	10.0	5.0	2.28	2.28	-0.28
725.0	5.69	42.02	724.5	10.6	11.6	6.1	1.68	1.64	-3.72
750.0	6.08	41.09	749.4	12.5	13.3	7.4	1.61	1.56	-3.72
775.0	6.47	40.28	774.3	14.6	15.1	8.7	1.60	1.56	-3.24
800.0	6.86	39.55	799.1	16.8	16.9	10.2	1.60	1.56	-2.92
825.0	6.97	37.95	823.9	19.2	18.8	11.8	0.89	0.44	-6.40
850.0	7.03	36.20	848.7	21.6	20.7	13.4	0.89	0.24	-7.00
875.0	7.10	34.49	873.5	24.1	22.4	15.2	0.89	0.28	-6.84
900.0	7.18	32.81	898.3	26.7	24.2	17.1	0.89	0.32	-6.72
925.0	6.94	31.66	923.1	29.3	25.8	19.0	1.11	-0.96	-4.60
950.0	6.68	30.45	948.0	31.8	27.3	20.9	1.19	-1.04	-4.84
975.0	6.42	29.15	972.8	34.3	28.8	22.7	1.20	-1.04	-5.20
1,000.0	6.17	27.75	997.7	36.7	30.1	24.6	1.17	-1.00	-5.60
1,025.0	5.89	27.01	1,022.5	39.1	31.3	26.3	1.16	-1.12	-2.96
1,050.0	5.62	26.32	1,047.4	41.3	32.4	28.1	1.11	-1.08	-2.76
1,075.0	5.34	25.55	1,072.3	43.4	33.4	29.8	1.16	-1.12	-3.08
1,100.0	5.07	24.71	1,097.2	45.5	34.4	31.4	1.12	-1.08	-3.36
1,125.0	4.83	25.01	1,122.1	47.4	35.3	32.9	0.97	-0.96	1.20
1,150.0	4.59	25.41	1,147.0	49.3	36.2	34.4	0.97	-0.96	1.60
1,175.0	4.36	25.86	1,171.9	51.1	37.0	35.7	0.93	-0.92	1.80
1,200.0	4.12	26.36	1,196.8	52.7	37.8	37.0	0.97	-0.96	2.00
1,225.0	3.79	26.33	1,221.8	54.3	38.6	38.2	1.32	-1.32	-0.12

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Scientific Drilling International

Survey Report



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Project: Tyler County WV
Site: Estlack Pad:
 Hare/Jujubee/Lucy/Matthews/Melvin
Well: Lucy Unit 2H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Lucy Unit 2H
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North Reference: Grid
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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)
1,250.0	3.43	26.15	1,246.7	55.7	39.3	39.3	1.44	-1.44	-0.72
1,275.0	3.08	25.94	1,271.7	57.0	39.9	40.3	1.40	-1.40	-0.84
1,300.0	2.73	25.71	1,296.7	58.1	40.5	41.2	1.40	-1.40	-0.92
1,325.0	2.52	26.24	1,321.6	59.1	41.0	42.0	0.85	-0.84	2.12
1,350.0	2.32	26.86	1,346.6	60.1	41.4	42.7	0.81	-0.80	2.48
1,375.0	2.11	27.60	1,371.6	60.9	41.9	43.4	0.85	-0.84	2.96
1,400.0	1.91	28.50	1,396.6	61.7	42.3	44.0	0.81	-0.80	3.60
1,425.0	1.74	28.25	1,421.6	62.4	42.7	44.5	0.68	-0.68	-1.00
1,450.0	1.57	27.85	1,446.6	63.0	43.0	45.0	0.68	-0.68	-1.60
1,475.0	1.40	27.36	1,471.6	63.6	43.3	45.5	0.68	-0.68	-1.96
1,500.0	1.23	26.73	1,496.5	64.1	43.6	45.9	0.68	-0.68	-2.52
1,525.0	1.10	26.78	1,521.5	64.6	43.8	46.2	0.52	-0.52	0.20
1,550.0	0.98	26.98	1,546.5	65.0	44.0	46.5	0.48	-0.48	0.80
1,575.0	0.85	27.23	1,571.5	65.3	44.2	46.8	0.52	-0.52	1.00
1,600.0	0.72	27.57	1,596.5	65.6	44.4	47.0	0.52	-0.52	1.36
1,625.0	0.70	30.31	1,621.5	65.9	44.5	47.2	0.16	-0.08	10.96
1,650.0	0.68	33.46	1,646.5	66.2	44.7	47.4	0.17	-0.08	12.60
1,675.0	0.67	36.73	1,671.5	66.4	44.8	47.6	0.16	-0.04	13.08
1,700.0	0.66	40.12	1,696.5	66.6	45.0	47.7	0.16	-0.04	13.56
1,725.0	0.66	43.15	1,721.5	66.9	45.2	47.9	0.14	0.00	12.12
1,750.0	0.67	46.11	1,746.5	67.1	45.4	48.0	0.14	0.04	11.84
1,775.0	0.68	49.01	1,771.5	67.3	45.6	48.1	0.14	0.04	11.60
1,800.0	0.69	51.84	1,796.5	67.5	45.9	48.2	0.14	0.04	11.32
1,825.0	0.68	54.49	1,821.5	67.6	46.1	48.3	0.13	-0.04	10.60
1,850.0	0.67	57.20	1,846.5	67.8	46.3	48.4	0.13	-0.04	10.84
1,875.0	0.66	59.98	1,871.5	67.9	46.6	48.5	0.14	-0.04	11.12
1,900.0	0.65	62.82	1,896.5	68.1	46.8	48.5	0.14	-0.04	11.36
1,925.0	0.62	63.72	1,921.5	68.2	47.1	48.5	0.13	-0.12	3.60
1,950.0	0.57	64.52	1,946.5	68.3	47.3	48.6	0.20	-0.20	3.20
1,975.0	0.53	65.46	1,971.5	68.4	47.5	48.6	0.16	-0.16	3.76
2,000.0	0.49	66.56	1,996.5	68.5	47.7	48.6	0.16	-0.16	4.40
2,025.0	0.41	69.39	2,021.5	68.6	47.9	48.6	0.33	-0.32	11.32
2,050.0	0.33	73.89	2,046.5	68.6	48.1	48.6	0.34	-0.32	18.00
2,075.0	0.26	81.06	2,071.5	68.7	48.2	48.6	0.32	-0.28	28.68
2,100.0	0.19	93.61	2,096.5	68.7	48.3	48.6	0.34	-0.28	50.20
2,125.0	0.19	98.94	2,121.5	68.7	48.4	48.5	0.07	0.00	21.32
2,150.0	0.18	103.57	2,146.5	68.6	48.5	48.5	0.07	-0.04	18.52
2,175.0	0.19	108.22	2,171.5	68.6	48.5	48.4	0.07	0.04	18.60
2,200.0	0.19	112.83	2,196.5	68.6	48.6	48.4	0.06	0.00	18.44
2,225.0	0.17	117.31	2,221.5	68.6	48.7	48.3	0.10	-0.08	17.92
2,250.0	0.14	123.09	2,246.5	68.5	48.7	48.3	0.14	-0.12	23.12
2,275.0	0.13	130.69	2,271.5	68.5	48.8	48.2	0.08	-0.04	30.40

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Survey Calculation Method: Minimum Curvature
Database: Antero NE

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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)
2,300.0	0.11	140.70	2,296.5	68.5	48.8	48.2	0.12	-0.08	40.04
2,325.0	0.09	137.64	2,321.5	68.4	48.9	48.1	0.08	-0.08	-12.24
2,350.0	0.08	131.67	2,346.5	68.4	48.9	48.1	0.05	-0.04	-23.88
2,375.0	0.06	122.39	2,371.5	68.4	48.9	48.1	0.09	-0.08	-37.12
2,400.0	0.05	107.19	2,396.5	68.4	48.9	48.1	0.07	-0.04	-60.80
2,425.0	0.03	170.36	2,421.5	68.4	48.9	48.1	0.18	-0.08	252.68
2,450.0	0.07	215.04	2,446.5	68.3	48.9	48.0	0.21	0.16	178.72
2,475.0	0.11	226.63	2,471.5	68.3	48.9	48.0	0.17	0.16	46.36
2,500.0	0.16	231.41	2,496.5	68.3	48.9	48.0	0.20	0.20	19.12
2,525.0	0.15	240.38	2,521.5	68.2	48.8	48.0	0.10	-0.04	35.88
2,550.0	0.13	252.06	2,546.5	68.2	48.7	48.0	0.14	-0.08	46.72
2,575.0	0.13	265.59	2,571.5	68.2	48.7	48.0	0.12	0.00	54.12
2,600.0	0.13	279.73	2,596.5	68.2	48.6	48.0	0.13	0.00	56.56
2,625.0	0.15	273.46	2,621.5	68.2	48.6	48.0	0.10	0.08	-25.08
2,650.0	0.18	266.58	2,646.5	68.2	48.5	48.1	0.14	0.12	-27.52
2,675.0	0.21	261.66	2,671.5	68.2	48.4	48.1	0.14	0.12	-19.68
2,700.0	0.24	258.01	2,696.5	68.2	48.3	48.1	0.13	0.12	-14.60
2,725.0	0.27	256.66	2,721.5	68.2	48.2	48.1	0.12	0.12	-5.40
2,750.0	0.29	255.70	2,746.5	68.1	48.1	48.1	0.08	0.08	-3.84
2,775.0	0.32	254.90	2,771.5	68.1	48.0	48.1	0.12	0.12	-3.20
2,800.0	0.34	254.21	2,796.5	68.1	47.8	48.1	0.08	0.08	-2.76
2,825.0	0.34	261.97	2,821.5	68.0	47.7	48.2	0.18	0.00	31.04
2,850.0	0.35	270.41	2,846.5	68.0	47.5	48.2	0.21	0.04	33.76
2,875.0	0.36	278.44	2,871.5	68.0	47.4	48.3	0.20	0.04	32.12
2,900.0	0.38	285.81	2,896.5	68.1	47.2	48.3	0.21	0.08	29.48
2,925.0	0.38	285.18	2,921.5	68.1	47.1	48.4	0.02	0.00	-2.52
2,950.0	0.39	283.53	2,946.5	68.1	46.9	48.5	0.06	0.04	-6.60
2,975.0	0.39	281.89	2,971.5	68.2	46.7	48.6	0.04	0.00	-6.56
3,000.0	0.39	280.27	2,996.5	68.2	46.6	48.7	0.04	0.00	-6.48
3,025.0	0.43	281.57	3,021.5	68.3	46.4	48.8	0.16	0.16	5.20
3,050.0	0.47	283.10	3,046.5	68.3	46.2	48.9	0.17	0.16	6.12
3,075.0	0.51	284.37	3,071.5	68.3	46.0	49.0	0.17	0.16	5.08
3,100.0	0.56	285.44	3,096.5	68.4	45.8	49.2	0.20	0.20	4.28
3,125.0	0.54	284.11	3,121.5	68.5	45.5	49.3	0.09	-0.08	-5.32
3,150.0	0.51	282.25	3,146.5	68.5	45.3	49.4	0.14	-0.12	-7.44
3,175.0	0.48	280.16	3,171.5	68.6	45.1	49.5	0.14	-0.12	-8.36
3,200.0	0.45	277.82	3,196.5	68.6	44.9	49.6	0.14	-0.12	-9.36
3,225.0	0.43	276.86	3,221.5	68.6	44.7	49.7	0.09	-0.08	-3.84
3,250.0	0.41	276.09	3,246.5	68.6	44.5	49.8	0.08	-0.08	-3.08
3,275.0	0.39	275.25	3,271.5	68.7	44.4	49.9	0.08	-0.08	-3.36
3,300.0	0.37	274.30	3,296.5	68.7	44.2	49.9	0.08	-0.08	-3.80
3,325.0	0.37	275.31	3,321.5	68.7	44.0	50.0	0.03	0.00	4.04
3,350.0	0.37	276.66	3,346.5	68.7	43.9	50.1	0.03	0.00	5.40

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11/10/2017



Scientific Drilling International
Survey Report



Company: Antero Resources
Project: Tyler County WV
Site: Estlack Pad:
 Hare/Jujubee/Lucy/Matthews/Melvin
Well: Lucy Unit 2H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Lucy Unit 2H
TVD Reference: Frontier 32: 1141' GL + 32' KB @ 1173.0usft
MD Reference: Frontier 32: 1141' GL + 32' KB @ 1173.0usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)
3,375.0	0.38	277.97	3,371.5	68.7	43.7	50.1	0.05	0.04	5.24
3,400.0	0.38	279.23	3,396.5	68.7	43.5	50.2	0.03	0.00	5.04
3,425.0	0.35	276.41	3,421.5	68.8	43.4	50.3	0.14	-0.12	-11.28
3,450.0	0.32	272.56	3,446.5	68.8	43.2	50.4	0.15	-0.12	-15.40
3,475.0	0.30	267.94	3,471.5	68.8	43.1	50.4	0.13	-0.08	-18.48
3,500.0	0.27	262.36	3,496.5	68.8	43.0	50.4	0.16	-0.12	-22.32
3,525.0	0.26	266.74	3,521.5	68.8	42.9	50.5	0.09	-0.04	17.52
3,550.0	0.26	273.09	3,546.5	68.8	42.7	50.5	0.12	0.00	25.40
3,575.0	0.26	279.39	3,571.5	68.8	42.6	50.6	0.11	0.00	25.20
3,600.0	0.27	285.47	3,596.5	68.8	42.5	50.6	0.12	0.04	24.32
3,625.0	0.29	285.54	3,621.5	68.8	42.4	50.7	0.08	0.08	0.28
3,650.0	0.32	285.08	3,646.5	68.9	42.3	50.8	0.12	0.12	-1.84
3,675.0	0.34	284.68	3,671.5	68.9	42.1	50.8	0.08	0.08	-1.60
3,700.0	0.40	273.70	3,696.5	68.9	42.0	50.9	0.37	0.24	-43.92
3,725.0	0.30	311.24	3,721.5	69.0	41.8	51.0	0.98	-0.40	150.16
3,750.0	0.75	76.90	3,746.5	69.1	42.0	51.0	3.83	1.80	502.64
3,775.0	1.90	87.96	3,771.5	69.1	42.5	50.9	4.69	4.60	44.24
3,800.0	3.48	78.03	3,796.4	69.3	43.7	50.7	6.57	6.32	-39.72
3,825.0	4.96	74.26	3,821.4	69.7	45.5	50.5	6.02	5.92	-15.08
3,850.0	6.03	73.44	3,846.3	70.4	47.8	50.4	4.29	4.28	-3.28
3,875.0	7.25	72.04	3,871.1	71.3	50.5	50.3	4.92	4.88	-5.60
3,900.0	7.93	69.03	3,895.9	72.4	53.6	50.3	3.15	2.72	-12.04
3,925.0	8.44	70.24	3,920.6	73.6	57.0	50.3	2.15	2.04	4.84
3,950.0	8.75	73.22	3,945.3	74.8	60.5	50.2	2.17	1.24	11.92
3,975.0	9.01	73.65	3,970.0	75.9	64.2	50.0	1.07	1.04	1.72
4,000.0	9.38	76.84	3,994.7	76.9	68.1	49.7	2.52	1.48	12.76
4,025.0	10.23	80.21	4,019.4	77.7	72.3	49.1	4.10	3.40	13.48
4,050.0	10.84	81.06	4,043.9	78.5	76.8	48.3	2.52	2.44	3.40
4,075.0	11.89	80.69	4,068.4	79.2	81.6	47.4	4.21	4.20	-1.48
4,100.0	12.56	78.49	4,092.9	80.2	86.8	46.5	3.26	2.68	-8.80
4,125.0	13.11	76.47	4,117.2	81.4	92.3	45.9	2.84	2.20	-8.08
4,150.0	13.04	73.88	4,141.6	82.9	97.7	45.4	2.36	-0.28	-10.36
4,175.0	13.22	72.14	4,165.9	84.5	103.1	45.2	1.74	0.72	-6.96
4,200.0	13.52	71.25	4,190.3	86.3	108.6	45.0	1.46	1.20	-3.56
4,225.0	14.05	72.22	4,214.5	88.2	114.3	44.9	2.31	2.12	3.88
4,250.0	14.71	73.44	4,238.8	90.0	120.2	44.6	2.90	2.64	4.88
4,275.0	15.15	74.25	4,262.9	91.8	126.4	44.3	1.95	1.76	3.24
4,300.0	15.81	76.78	4,287.0	93.5	132.9	43.7	3.78	2.64	10.12
4,325.0	16.53	78.65	4,311.0	95.0	139.7	42.8	3.55	2.88	7.48
4,350.0	17.39	79.64	4,334.9	96.3	146.8	41.7	3.63	3.44	3.96
4,375.0	17.94	80.58	4,358.8	97.6	154.3	40.4	2.48	2.20	3.76
4,400.0	18.62	82.38	4,382.5	98.8	162.1	38.9	3.54	2.72	7.20

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Survey

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4,425.0	19.74	84.45	4,406.1	99.7	170.2	37.1	5.24	4.48	8.28
4,450.0	20.28	87.28	4,429.6	100.4	178.8	34.8	4.43	2.16	11.32
4,475.0	20.17	89.59	4,453.1	100.6	187.4	32.1	3.22	-0.44	9.24
4,500.0	20.82	91.63	4,476.5	100.5	196.1	29.1	3.86	2.60	8.16
4,525.0	21.26	93.33	4,499.8	100.1	205.1	25.7	3.01	1.76	6.80
4,550.0	21.65	94.69	4,523.1	99.5	214.2	22.1	2.53	1.56	5.44
4,575.0	22.11	96.18	4,546.3	98.6	223.5	18.2	2.88	1.84	5.96
4,600.0	22.61	96.54	4,569.4	97.5	233.0	14.0	2.07	2.00	1.44
4,625.0	23.09	97.13	4,592.4	96.4	242.6	9.7	2.13	1.92	2.36
4,650.0	23.37	96.75	4,615.4	95.2	252.4	5.3	1.27	1.12	-1.52
4,675.0	23.69	96.37	4,638.3	94.0	262.3	0.9	1.42	1.28	-1.52
4,700.0	24.14	95.48	4,661.2	93.0	272.4	-3.5	2.31	1.80	-3.56
4,725.0	24.15	94.23	4,684.0	92.1	282.6	-7.7	2.05	0.04	-5.00
4,750.0	24.29	91.60	4,706.8	91.6	292.8	-11.6	4.35	0.56	-10.52
4,775.0	25.09	89.05	4,729.5	91.6	303.2	-15.1	5.33	3.20	-10.20
4,800.0	25.97	87.70	4,752.1	91.9	314.0	-18.5	4.22	3.52	-5.40
4,825.0	26.71	87.07	4,774.5	92.4	325.1	-21.7	3.16	2.96	-2.52
4,850.0	27.18	86.73	4,796.8	93.0	336.4	-24.9	1.98	1.88	-1.36
4,875.0	27.22	86.58	4,819.0	93.6	347.8	-28.1	0.32	0.16	-0.68
4,900.0	27.54	86.17	4,841.2	94.4	359.3	-31.2	1.49	1.28	-0.68
4,925.0	25.89	85.39	4,863.5	95.2	370.5	-34.2	6.75	-6.60	9.12
4,950.0	25.03	84.73	4,886.1	96.1	381.2	-36.9	3.62	-3.44	2.64
4,975.0	24.08	84.21	4,908.8	97.1	391.5	-39.4	3.90	-3.80	0.08
5,000.0	23.11	83.88	4,931.7	98.2	401.5	-41.8	3.92	-3.88	-0.32
5,025.0	22.27	83.19	4,954.8	99.2	411.1	-44.0	3.52	-3.36	-2.76
5,050.0	21.58	82.78	4,978.0	100.4	420.3	-46.0	2.83	-2.76	-1.64
5,075.0	20.93	82.44	5,001.3	101.6	429.3	-47.9	2.65	-2.60	-1.36
5,100.0	21.51	82.36	5,024.6	102.7	438.3	-49.8	2.32	2.32	-0.32
5,125.0	22.05	82.59	5,047.8	104.0	447.5	-51.7	2.19	2.16	0.92
5,150.0	22.36	82.66	5,071.0	105.2	456.9	-53.7	1.24	1.24	0.28
5,175.0	23.09	82.36	5,094.0	106.4	466.4	-55.7	2.96	2.92	-1.20
5,200.0	24.20	82.01	5,116.9	107.8	476.4	-57.7	4.48	4.44	-1.40
5,225.0	24.50	83.27	5,139.7	109.1	486.6	-59.9	2.40	1.20	5.04
5,250.0	25.17	84.75	5,162.4	110.2	497.0	-62.4	3.66	2.68	5.92
5,275.0	25.98	86.14	5,184.9	111.1	507.8	-65.2	4.03	3.24	5.56
5,300.0	26.50	88.08	5,207.4	111.6	518.8	-68.3	4.01	2.08	7.76
5,325.0	26.79	89.91	5,229.7	111.8	530.0	-71.9	3.48	1.16	7.32
5,350.0	26.80	90.80	5,252.0	111.7	541.3	-75.7	1.61	0.04	3.56
5,375.0	26.20	90.61	5,274.4	111.6	552.5	-79.6	2.42	-2.40	-0.76
5,400.0	25.92	90.61	5,296.9	111.5	563.5	-83.4	1.12	-1.12	0.00
5,425.0	25.60	90.58	5,319.4	111.4	574.3	-87.1	1.28	-1.28	-0.12
5,450.0	25.97	90.77	5,341.9	111.3	585.2	-90.9	1.52	1.48	0.76
5,475.0	26.51	92.19	5,364.3	111.0	596.2	-94.8	3.31	2.16	5.68

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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)
5,500.0	27.18	92.13	5,386.6	110.5	607.5	-99.0	2.68	2.68	-0.24
5,525.0	27.88	92.69	5,408.8	110.1	619.1	-103.3	2.99	2.80	2.24
5,550.0	28.05	92.47	5,430.9	109.5	630.8	-107.8	0.80	0.68	-0.88
5,575.0	28.04	92.57	5,452.9	109.0	642.5	-112.2	0.19	-0.04	0.40
5,600.0	27.44	91.91	5,475.1	108.6	654.1	-116.5	2.70	-2.40	-2.64
5,625.0	26.66	92.04	5,497.3	108.2	665.5	-120.7	3.13	-3.12	0.52
5,650.0	25.26	91.61	5,519.8	107.8	676.4	-124.6	5.65	-5.60	-1.72
5,675.0	24.81	91.44	5,542.5	107.5	687.0	-128.4	1.82	-1.80	-0.68
5,700.0	25.06	92.06	5,565.1	107.2	697.6	-132.3	1.45	1.00	2.48
5,725.0	24.39	91.70	5,587.8	106.9	708.0	-136.1	2.75	-2.68	-1.44
5,750.0	24.49	91.25	5,610.6	106.6	718.3	-139.8	0.85	0.40	-1.80
5,775.0	25.04	91.16	5,633.3	106.4	728.8	-143.5	2.21	2.20	-0.36
5,800.0	25.19	91.04	5,655.9	106.2	739.4	-147.3	0.63	0.60	-0.48
5,825.0	25.62	90.95	5,678.5	106.0	750.1	-151.0	1.73	1.72	-0.36
5,850.0	25.68	90.82	5,701.0	105.8	761.0	-154.8	0.33	0.24	-0.52
5,875.0	25.89	90.22	5,723.6	105.7	771.8	-158.5	1.34	0.84	-2.40
5,900.0	25.62	89.07	5,746.1	105.8	782.7	-162.1	2.27	-1.08	-4.60
5,925.0	26.19	88.86	5,768.6	106.0	793.6	-165.6	2.31	2.28	-0.84
5,950.0	25.52	87.93	5,791.1	106.3	804.5	-168.9	3.13	-2.68	-3.72
5,975.0	24.28	87.42	5,813.7	106.7	815.0	-172.0	5.03	-4.96	-2.04
6,000.0	23.93	87.12	5,836.6	107.2	825.2	-175.0	1.48	-1.40	-1.20
6,037.0	24.25	86.47	5,870.3	108.1	840.3	-179.2	1.12	0.86	-1.76
Last Gyro @ 6037									
6,099.0	25.78	82.41	5,926.5	110.6	866.4	-185.5	3.71	2.46	-6.55
RNST @ 6099									
6,127.0	26.50	80.72	5,951.7	112.4	878.6	-187.9	3.70	2.58	-6.03
First SDI MWD @ 6127									
6,159.0	27.02	79.80	5,980.2	114.9	892.8	-190.4	2.08	1.63	-2.88
6,191.0	26.62	80.25	6,008.8	117.4	907.0	-192.8	1.40	-1.25	1.41
6,223.0	26.01	79.78	6,037.5	119.8	921.0	-195.1	2.01	-1.91	-1.47
6,254.0	25.28	79.44	6,065.4	122.2	934.2	-197.2	2.40	-2.35	-1.10
6,286.0	25.22	74.85	6,094.4	125.3	947.5	-198.8	6.12	-0.19	-14.34
6,317.0	24.78	64.70	6,122.5	129.8	959.7	-198.7	13.89	-1.42	-32.74
6,349.0	25.89	52.37	6,151.4	136.9	971.3	-195.8	16.82	3.47	-38.53
6,380.0	27.90	43.18	6,179.1	146.3	981.7	-190.4	14.88	6.48	-29.65
6,412.0	29.42	36.93	6,207.1	158.1	991.5	-182.6	10.50	4.75	-19.53
6,443.0	31.51	30.84	6,233.9	171.1	1,000.2	-173.3	12.02	6.74	-19.65
6,475.0	33.37	24.64	6,260.9	186.3	1,008.2	-161.6	11.90	5.81	-19.38
6,483.0	33.76	23.28	6,267.6	190.4	1,010.0	-158.4	10.59	4.92	-16.96
SCMR @ 6483									
6,507.0	35.03	19.38	6,287.4	203.0	1,014.9	-148.2	10.59	5.28	-16.26
6,538.0	37.06	14.43	6,312.4	220.4	1,020.2	-133.5	11.45	6.55	-15.97
6,570.0	38.86	10.14	6,337.7	239.7	1,024.4	-116.8	9.98	5.63	-13.41

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6,601.0	41.22	6.08	6,361.4	259.4	1,027.2	-99.1	11.35	7.61	-13.10	
6,633.0	43.08	2.54	6,385.1	280.8	1,028.8	-79.5	9.43	5.81	-11.06	
6,665.0	45.27	0.03	6,408.1	303.1	1,029.3	-58.6	8.76	6.84	-7.84	
6,697.0	47.95	357.58	6,430.1	326.3	1,028.8	-36.5	10.05	8.38	-7.66	
6,709.0	49.06	356.70	6,438.0	335.3	1,028.3	-27.9	10.71	9.22	-7.28	
MDLX @ 6709										
6,728.0	50.82	355.38	6,450.2	349.8	1,027.3	-13.9	10.71	9.28	-6.98	
6,760.0	52.65	354.47	6,470.0	374.8	1,025.1	10.4	6.14	5.72	-2.84	
6,792.0	55.11	351.97	6,488.9	400.5	1,022.0	35.6	9.95	7.69	-7.81	
6,823.0	57.87	350.11	6,506.0	426.0	1,018.0	61.0	10.21	8.90	-6.00	
6,855.0	61.15	347.92	6,522.3	453.1	1,012.7	88.3	11.82	10.25	-6.84	
6,887.0	63.16	346.55	6,537.2	480.7	1,006.5	116.4	7.33	6.28	-4.28	
6,897.0	63.82	346.34	6,541.7	489.4	1,004.4	125.3	6.85	6.58	-2.12	
BRKT @ 6897										
6,918.0	65.20	345.90	6,550.7	507.8	999.8	144.1	6.85	6.58	-2.09	
6,950.0	67.41	344.50	6,563.6	536.1	992.3	173.3	7.98	6.91	-4.38	
6,971.0	69.05	342.99	6,571.4	554.8	986.9	192.8	10.25	7.80	-7.17	
TLLY @ 6971										
6,982.0	69.91	342.22	6,575.2	564.7	983.8	203.1	10.25	7.84	-7.05	
7,013.0	72.26	340.78	6,585.3	592.5	974.5	232.4	8.76	7.58	-4.65	
7,045.0	74.13	338.38	6,594.5	621.2	963.8	263.0	9.26	5.84	-7.50	
7,075.0	75.89	337.94	6,602.3	648.1	953.0	292.0	6.04	5.87	-1.47	
MRCL_HOT @ 7075										
7,077.0	76.01	337.91	6,602.8	649.9	952.3	293.9	6.04	5.88	-1.46	
7,108.0	78.10	337.64	6,609.7	677.8	940.9	324.1	6.80	6.74	-0.87	
7,140.0	80.81	337.88	6,615.6	707.0	929.0	355.5	8.50	8.47	0.75	
7,172.0	84.34	337.42	6,619.7	736.3	916.9	387.2	11.12	11.03	-1.44	
7,203.0	85.47	337.76	6,622.4	764.8	905.1	418.1	3.81	3.65	1.10	
7,230.0	87.31	337.04	6,624.1	789.7	894.8	445.0	7.32	6.81	-2.67	
7,262.0	90.34	337.04	6,624.8	819.2	882.3	476.9	9.47	9.47	0.00	
7,294.0	91.01	336.69	6,624.4	848.6	869.7	508.8	2.36	2.09	-1.09	
7,389.0	90.17	336.37	6,623.4	935.7	831.9	603.6	0.95	-0.88	-0.34	
7,484.0	90.67	338.44	6,622.8	1,023.4	795.4	698.5	2.24	0.53	2.18	
7,579.0	91.11	341.84	6,621.3	1,112.8	763.1	793.4	3.61	0.46	3.58	
7,673.0	91.01	342.51	6,619.5	1,202.2	734.4	887.4	0.72	-0.11	0.71	
7,769.0	89.56	340.87	6,619.1	1,293.4	704.2	983.3	2.28	-1.51	-1.71	
7,864.0	90.30	341.62	6,619.2	1,383.3	673.7	1,078.3	1.11	0.78	0.79	
7,959.0	89.66	342.56	6,619.2	1,473.7	644.4	1,173.3	1.20	-0.67	0.99	
8,053.0	90.44	341.06	6,619.1	1,563.0	615.1	1,267.3	1.80	0.83	-1.60	
8,149.0	90.67	339.97	6,618.2	1,653.5	583.1	1,363.3	1.16	0.24	-1.14	
8,244.0	89.53	340.93	6,618.0	1,743.0	551.3	1,458.3	1.57	-1.20	1.01	
8,338.0	89.16	339.48	6,619.1	1,831.5	519.5	1,552.2	1.59	-0.39	-1.54	
8,432.0	90.44	338.64	6,619.4	1,919.3	485.9	1,646.2	1.63	1.36	-0.89	



Scientific Drilling International
Survey Report



Company: Antero Resources
Project: Tyler County WV
Site: Estlack Pad:
 Hare/Jujubee/Lucy/Matthews/Melvin
Well: Lucy Unit 2H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Lucy Unit 2H
TVD Reference: Frontier 32: 1141' GL + 32' KB @ 1173.0usft
MD Reference: Frontier 32: 1141' GL + 32' KB @ 1173.0usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)
8,527.0	90.34	339.93	6,618.8	2,008.1	452.3	1,741.2	1.36	-0.11	1.36
8,621.0	89.90	339.89	6,618.6	2,096.4	420.0	1,835.2	0.47	-0.47	-0.04
8,716.0	90.30	339.42	6,618.4	2,185.5	386.9	1,930.2	0.65	0.42	-0.49
8,811.0	90.47	341.92	6,617.8	2,275.1	355.5	2,025.2	2.64	0.18	2.63
8,906.0	88.89	342.07	6,618.3	2,365.4	326.1	2,120.1	1.67	-1.66	0.16
9,000.0	89.26	343.04	6,619.8	2,455.1	298.0	2,214.0	1.10	0.39	1.03
9,095.0	91.04	340.23	6,619.6	2,545.2	268.0	2,309.0	3.50	1.87	-2.96
9,189.0	91.07	337.62	6,617.9	2,632.9	234.2	2,403.0	2.78	0.03	-2.78
9,284.0	91.24	340.24	6,615.9	2,721.6	200.1	2,497.9	2.76	0.18	2.76
9,380.0	89.60	339.47	6,615.2	2,811.7	167.0	2,593.9	1.89	-1.71	-0.80
9,476.0	91.41	342.68	6,614.4	2,902.5	135.9	2,689.9	3.84	1.89	3.34
9,571.0	89.60	342.54	6,613.6	2,993.1	107.5	2,784.8	1.91	-1.91	-0.15
9,666.0	91.01	344.32	6,613.0	3,084.2	80.4	2,879.6	2.39	1.48	1.87
9,762.0	89.80	342.49	6,612.4	3,176.2	53.0	2,975.5	2.29	-1.26	-1.91
9,857.0	90.50	341.93	6,612.1	3,266.6	24.0	3,070.5	0.94	0.74	-0.59
9,953.0	90.34	339.21	6,611.4	3,357.1	-7.9	3,166.4	2.84	-0.17	-2.83
10,048.0	90.60	336.32	6,610.6	3,445.1	-43.9	3,261.3	3.05	0.27	-3.04
10,144.0	90.84	337.19	6,609.4	3,533.3	-81.8	3,357.1	0.94	0.25	0.91
10,238.0	91.78	339.06	6,607.3	3,620.5	-116.8	3,451.0	2.23	1.00	1.99
10,334.0	90.97	338.68	6,605.0	3,710.0	-151.4	3,546.9	0.93	-0.84	-0.40
10,428.0	90.00	338.93	6,604.2	3,797.6	-185.4	3,640.9	1.07	-1.03	0.27
10,523.0	90.00	340.92	6,604.2	3,886.8	-218.0	3,735.9	2.09	0.00	2.09
10,618.0	90.97	339.86	6,603.4	3,976.3	-249.8	3,830.9	1.51	1.02	-1.12
10,712.0	90.67	342.24	6,602.0	4,065.2	-280.4	3,924.9	2.55	-0.32	2.53
10,807.0	90.70	341.21	6,600.9	4,155.4	-310.2	4,019.8	1.08	0.03	-1.08
10,902.0	90.67	340.83	6,599.8	4,245.2	-341.0	4,114.8	0.40	-0.03	-0.40
10,997.0	89.40	340.80	6,599.7	4,335.0	-372.3	4,209.8	1.34	-1.34	-0.03
11,090.0	89.67	339.75	6,600.5	4,422.5	-403.7	4,302.8	1.17	0.29	-1.13
11,185.0	90.34	341.10	6,600.4	4,512.0	-435.5	4,397.8	1.59	0.71	1.42
11,279.0	89.13	340.34	6,600.9	4,600.7	-466.5	4,491.8	1.52	-1.29	-0.81
11,373.0	90.81	342.37	6,600.9	4,689.8	-496.6	4,585.8	2.80	1.79	2.16
11,468.0	89.83	340.72	6,600.4	4,779.9	-526.6	4,680.8	2.02	-1.03	-1.74
11,563.0	90.24	340.29	6,600.3	4,869.5	-558.3	4,775.8	0.63	0.43	-0.45
11,657.0	90.44	339.50	6,599.8	4,957.7	-590.7	4,869.8	0.87	0.21	-0.84
11,752.0	90.57	336.70	6,598.9	5,045.9	-626.1	4,964.7	2.95	0.14	-2.95
11,846.0	90.13	340.19	6,598.4	5,133.3	-660.6	5,058.6	3.74	-0.47	3.71
11,941.0	91.18	342.92	6,597.3	5,223.4	-690.7	5,153.6	3.08	1.11	2.87
12,035.0	91.04	342.07	6,595.5	5,313.0	-718.9	5,247.5	0.92	-0.15	-0.90
12,129.0	90.60	339.63	6,594.1	5,401.8	-749.8	5,341.5	2.64	-0.47	-2.60
12,224.0	88.93	339.18	6,594.5	5,490.7	-783.2	5,436.4	1.82	-1.76	-0.47
12,319.0	89.16	340.53	6,596.1	5,579.9	-815.9	5,531.4	1.44	0.24	1.42
12,414.0	89.43	339.50	6,597.3	5,669.2	-848.4	5,626.4	1.12	0.28	-1.08

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Scientific Drilling International
Survey Report



Company: Antero Resources
Project: Tyler County WV
Site: Estlack Pad:
 Hare/Jujubee/Lucy/Matthews/Melvin
Well: Lucy Unit 2H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Lucy Unit 2H
TVD Reference: Frontier 32: 1141' GL + 32' KB @ 1173.0usft
MD Reference: Frontier 32: 1141' GL + 32' KB @ 1173.0usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)
12,509.0	89.66	341.61	6,598.0	5,758.7	-880.0	5,721.4	2.23	0.24	2.22
12,603.0	90.54	341.62	6,597.9	5,847.9	-909.6	5,815.4	0.94	0.94	0.01
12,699.0	90.10	341.19	6,597.3	5,938.9	-940.2	5,911.4	0.64	-0.46	-0.45
12,794.0	89.20	341.05	6,597.9	6,028.8	-971.0	6,006.3	0.96	-0.95	-0.15
12,888.0	88.79	341.60	6,599.5	6,117.8	-1,001.1	6,100.3	0.73	-0.44	0.59
12,982.0	89.33	341.94	6,601.1	6,207.1	-1,030.5	6,194.3	0.68	0.57	0.36
13,077.0	88.86	341.01	6,602.6	6,297.2	-1,060.7	6,289.3	1.10	-0.49	-0.98
13,173.0	88.83	338.73	6,604.5	6,387.3	-1,093.7	6,385.2	2.37	-0.03	-2.38
13,267.0	88.69	336.97	6,606.6	6,474.3	-1,129.1	6,479.1	1.88	-0.15	-1.87
13,361.0	90.34	340.85	6,607.4	6,562.0	-1,162.9	6,573.0	4.49	1.76	4.13
13,455.0	91.24	341.18	6,606.1	6,650.9	-1,193.5	6,667.0	1.02	0.96	0.35
13,550.0	91.61	341.05	6,603.7	6,740.7	-1,224.2	6,762.0	0.41	0.39	-0.14
13,645.0	90.17	341.05	6,602.2	6,830.6	-1,255.1	6,857.0	1.52	-1.52	0.00
13,740.0	89.83	340.13	6,602.2	6,920.2	-1,286.7	6,952.0	1.03	-0.36	-0.97
13,834.0	88.52	339.15	6,603.6	7,008.3	-1,319.4	7,045.9	1.74	-1.39	-1.04
13,928.0	89.10	339.00	6,605.5	7,096.1	-1,352.9	7,139.9	0.64	0.62	-0.16
14,022.0	88.32	340.16	6,607.6	7,184.1	-1,385.7	7,233.9	1.49	-0.83	1.23
14,117.0	89.16	342.55	6,609.7	7,274.1	-1,416.1	7,328.8	2.67	0.88	2.52
14,211.0	90.00	342.73	6,610.4	7,363.8	-1,444.1	7,422.7	0.91	0.89	0.19
14,306.0	88.82	339.73	6,611.4	7,453.8	-1,474.7	7,517.7	3.39	-1.24	-3.16
14,400.0	89.80	340.26	6,612.5	7,542.1	-1,506.8	7,611.7	1.19	1.04	0.56
14,495.0	88.79	340.83	6,613.7	7,631.7	-1,538.5	7,706.7	1.22	-1.06	0.60
14,589.0	88.32	338.48	6,616.1	7,719.8	-1,571.1	7,800.7	2.55	-0.50	-2.50
14,684.0	89.50	339.61	6,617.9	7,808.5	-1,605.1	7,895.6	1.72	1.24	1.19
14,778.0	91.01	340.62	6,617.5	7,896.8	-1,637.1	7,989.6	1.93	1.61	1.07
14,872.0	89.50	339.40	6,617.0	7,985.2	-1,669.2	8,083.6	2.07	-1.61	-1.30
14,966.0	89.43	338.73	6,617.9	8,073.0	-1,702.8	8,177.6	0.72	-0.07	-0.71
15,061.0	89.83	340.52	6,618.5	8,162.0	-1,735.9	8,272.5	1.93	0.42	1.88
15,155.0	88.76	341.08	6,619.7	8,250.8	-1,766.8	8,366.5	1.28	-1.14	0.60
15,250.0	89.97	340.59	6,620.7	8,340.5	-1,798.0	8,461.5	1.37	1.27	-0.52
15,344.0	90.57	342.53	6,620.3	8,429.7	-1,827.7	8,555.5	2.16	0.64	2.06
15,439.0	89.23	341.25	6,620.5	8,520.0	-1,857.2	8,650.5	1.95	-1.41	-1.35
15,533.0	89.29	340.20	6,621.7	8,608.7	-1,888.3	8,744.5	1.12	0.06	-1.12
15,626.0	89.30	340.34	6,622.8	8,696.2	-1,919.6	8,837.4	0.15	0.01	0.15
15,720.0	90.07	341.08	6,623.3	8,784.9	-1,950.7	8,931.4	1.14	0.82	0.79
15,815.0	89.20	341.01	6,623.9	8,874.8	-1,981.6	9,026.4	0.92	-0.92	-0.07
15,910.0	89.90	341.18	6,624.7	8,964.7	-2,012.3	9,121.4	0.76	0.74	0.18
16,002.0	89.09	341.58	6,625.5	9,051.8	-2,041.7	9,213.4	0.98	-0.88	0.43
16,098.0	89.26	341.03	6,626.9	9,142.8	-2,072.5	9,309.4	0.60	0.18	-0.57
16,192.0	89.40	338.03	6,628.0	9,230.8	-2,105.3	9,403.4	3.19	0.15	-3.19
16,286.0	89.63	337.19	6,628.8	9,317.7	-2,141.1	9,497.2	0.93	0.24	-0.89
16,380.0	90.20	339.50	6,628.9	9,405.1	-2,175.8	9,591.2	2.53	0.61	2.46
16,474.0	89.56	340.95	6,629.1	9,493.5	-2,207.6	9,685.2	1.69	-0.68	1.54



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Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Lucy Unit 2H
TVD Reference: Frontier 32: 1141' GL + 32' KB @ 1173.0usft
MD Reference: Frontier 32: 1141' GL + 32' KB @ 1173.0usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)
16,568.0	90.60	340.37	6,629.0	9,582.2	-2,238.8	9,779.2	1.27	1.11	-0.62
16,664.0	90.90	342.01	6,627.7	9,673.1	-2,269.7	9,875.1	1.74	0.31	1.71
16,758.0	90.44	341.79	6,626.6	9,762.4	-2,298.9	9,969.1	0.54	-0.49	-0.23
16,853.0	88.49	340.91	6,627.5	9,852.4	-2,329.3	10,064.1	2.25	-2.05	-0.93
16,946.0	89.70	341.22	6,629.0	9,940.4	-2,359.5	10,157.1	1.34	1.30	0.33
17,041.0	90.70	341.56	6,628.7	10,030.4	-2,389.8	10,252.0	1.11	1.05	0.36
17,135.0	90.27	340.36	6,627.9	10,119.3	-2,420.4	10,346.0	1.36	-0.46	-1.28
17,229.0	89.93	339.40	6,627.7	10,207.5	-2,452.8	10,440.0	1.08	-0.36	-1.02
17,250.0	90.60	339.54	6,627.6	10,227.2	-2,460.2	10,461.1	3.25	3.19	0.67
Last SDI MWD @ 17250									
17,309.0	90.60	339.54	6,627.0	10,282.5	-2,480.8	10,520.0	0.00	0.00	0.00
Projection To Bit @ 17309 MD / 6627 TVD									

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,099.0	5,926.5	RNST @ 6099		0.00	
6,483.0	6,267.6	SCMR @ 6483		0.00	
6,709.0	6,438.0	MDLX @ 6709		0.00	
6,897.0	6,541.7	BRKT @ 6897		0.00	
6,971.0	6,571.4	TLLY @ 6971		0.00	
7,075.0	6,602.3	MRCL_HOT @ 7075		0.00	

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Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
25.0	25.0	0.0	0.0	First Gyro @ 25
6,037.0	5,870.3	108.1	840.3	Last Gyro @ 6037
6,127.0	5,951.7	112.4	878.6	First SDI MWD @ 6127
17,250.0	6,627.6	10,227.2	-2,460.2	Last SDI MWD @ 17250
17,309.0	6,627.0	10,282.5	-2,480.8	Projection To Bit @ 17309 MD / 6627 TVD

Checked By: _____ Approved By: _____ Date: _____