



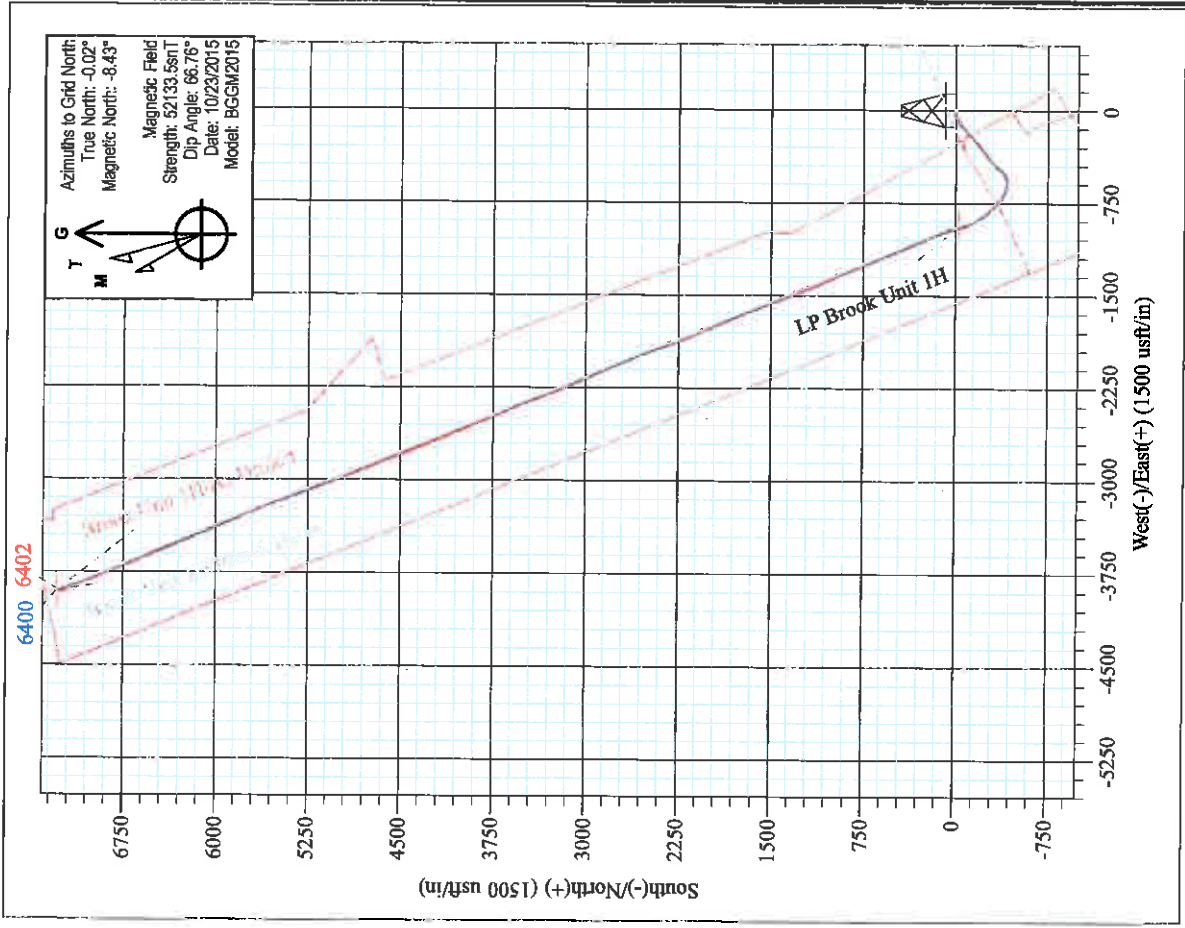
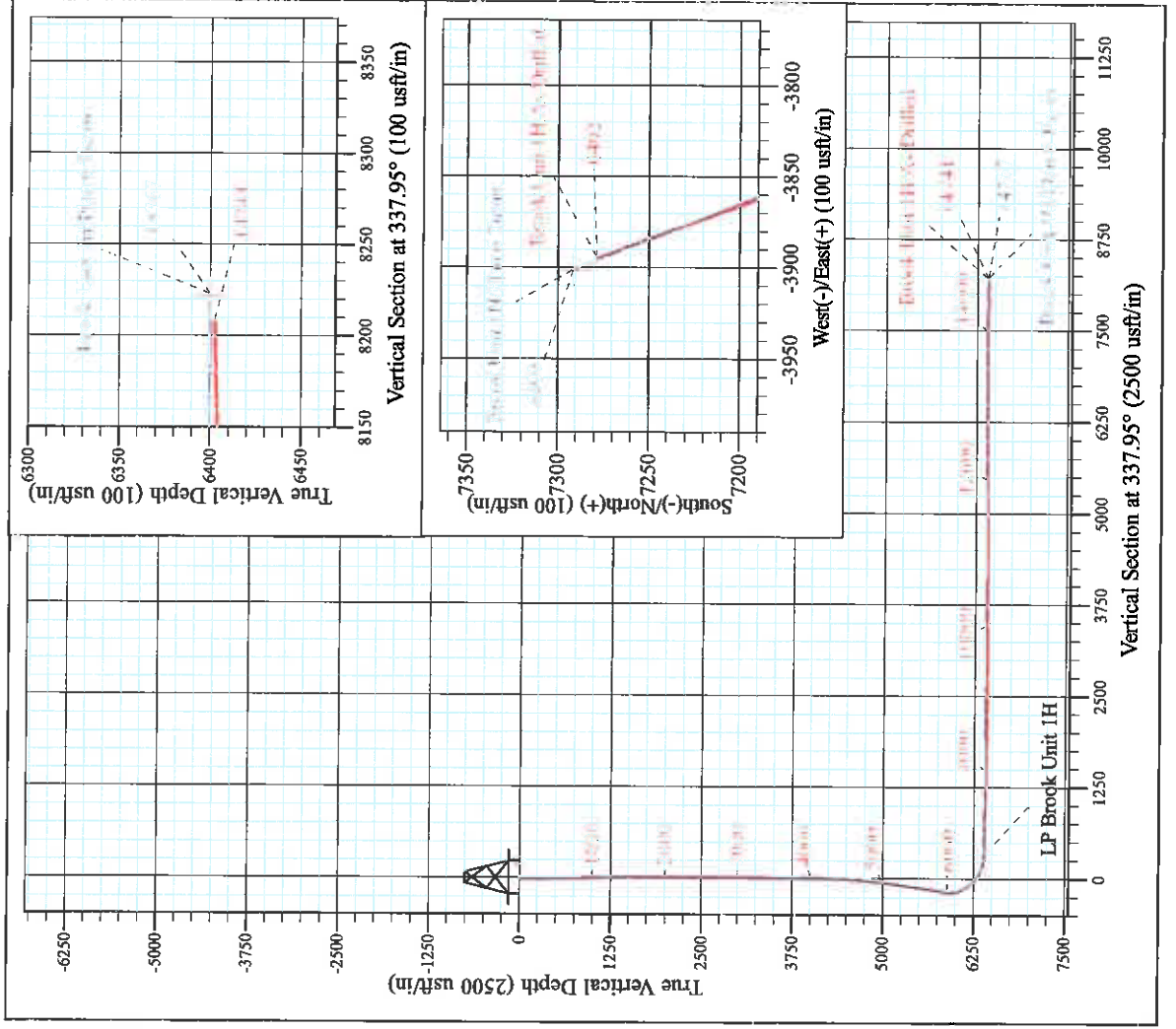
Charlene Pad: Hendershot/Paige/Eppard/Brook/Bow  
 Brook Unit 1H  
 Plan 6 Tie-in  
 Patterson 347: 1118' GL + 25' KB @ 1143.0usft  
 Ritchie County WV

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: Brook Unit 1H SHL

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	14271028.62	1650674.74	39° 17' 58.619 N	80° 57' 49.462 W



Brook Unit 1H  
 Approx. BHL  
 39° 19' 10.601 N 80° 58' 38.996 W

Shane Rhodes  
 12-31, November 05 2015  
 Scientific Drilling International  
 124 Visia Drive  
 Charleroi, PA 15022



## **Antero Resources**

**Ritchie County WV**

**Charlene Pad: Hendershot/Paige/Eppard/Brook/Bow  
Brook Unit 1H**

**Original Wellpath**

**Design: As Drilled**

## **Standard Survey Report**

**05 November, 2015**

Oil and Gas  
SECTION 6  
E...  
of  
Section





<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well Brook Unit 1H
<b>Project:</b>	Ritchie County WV	<b>TVD Reference:</b>	Patterson 347: 1118' GL + 25' KB @ 1143.0usft
<b>Sits:</b>	Charlene Pad: Hendershot/Paige/Eppard/Brook/Bow	<b>MD Reference:</b>	Patterson 347: 1118' GL + 25' KB @ 1143.0usft
<b>Well:</b>	Brook Unit 1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	Antero NE

<b>Project</b>	Ritchie County WV, Ritchie County WV, WV North		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Feet)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD 1927 (NADCON CONUS)		
<b>Map Zone:</b>	Zone 17N (84 W to 78 W)		

<b>Site</b>	Charlene Pad Hendershot/Paige/Eppard/Brook/Bow, SHL Hendershot Unit 1H				
<b>Site Position:</b>		<b>Northing:</b>	14,270,988.12 usft	<b>Latitude:</b>	39° 17' 58.219 N
<b>From:</b>	Map	<b>Easting:</b>	1,650,704.41 usft	<b>Longitude:</b>	80° 57' 49.084 W
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.02 °

<b>Well</b>	Brook Unit 1H, Marcellus					
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b>	14,271,028.62 usft	<b>Latitude:</b>	39° 17' 58.619 N
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b>	1,650,674.74 usft	<b>Longitude:</b>	80° 57' 49.462 W
<b>Position Uncertainty</b>		2.0 usft	<b>Wellhead Elevation:</b>	1,143.0 usft	<b>Ground Level:</b>	1,118.0 usft

<b>Wellbore</b>	Original Wellpath				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	BGGM2015	10/23/2015	-8.41	66.76	52,134

<b>Design</b>	As Drilled				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	337.95	

<b>Survey Program</b>	<b>Date</b>	11/5/2015			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
112.0	5,785.5	Survey #9 Final Gyro (Original Wellpath)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4	
5,915.0	14,741.0	Survey #10 MWD (Original Wellpath)	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	
112.0	1.17	91.56	112.0	0.0	1.1	-0.5	1.04	1.04	0.00	
<b>First SDI Gyro @ 100 MD</b>										
137.0	1.11	92.38	137.0	0.0	1.6	-0.7	0.25	-0.24	3.28	
162.0	0.90	90.22	162.0	-0.1	2.1	-0.8	0.85	-0.84	-8.64	
187.0	0.71	91.95	187.0	-0.1	2.4	-1.0	0.77	-0.76	6.92	
212.0	0.54	87.88	212.0	-0.1	2.7	-1.1	0.70	-0.68	-16.28	
237.0	0.47	86.76	237.0	-0.1	2.9	-1.2	0.28	-0.28	3.52	
262.0	0.45	88.66	262.0	-0.1	3.1	-1.2	0.08	-0.08	-0.40	



Scientific Drilling International  
Survey Report



**Company:** Antero Resources  
**Project:** Ritchie County WV  
**Site:** Charlene Pad:  
 Hendershot/Paige/Eppard/Brook/Bow  
**Well:** Brook Unit 1H  
**Wellbore:** Original Wellpath  
**Design:** As Drilled

**Local Co-ordinate Reference:** Well Brook Unit 1H  
**TVD Reference:** Patterson 347' 1118' GL + 25' KB @ 1143.0usft  
**MD Reference:** Patterson 347' 1118' GL + 25' KB @ 1143.0usft  
**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)
287.0	0.42	87.99	287.0	0.0	3.3	-1.3	0.12	-0.12	-2.68
312.0	0.42	90.71	312.0	0.0	3.5	-1.4	0.08	0.00	10.88
337.0	0.37	95.25	337.0	-0.1	3.7	-1.4	0.24	-0.20	18.16
362.0	0.38	103.74	362.0	-0.1	3.8	-1.5	0.23	0.04	33.96
387.0	0.30	89.61	387.0	-0.1	4.0	-1.6	0.46	-0.32	-56.52
412.0	0.28	96.63	412.0	-0.1	4.1	-1.6	0.16	-0.08	28.08
437.0	0.23	91.19	437.0	-0.1	4.2	-1.7	0.22	-0.20	-21.76
462.0	0.12	69.56	462.0	-0.1	4.3	-1.7	0.51	-0.44	-86.52
487.0	0.09	6.39	487.0	-0.1	4.3	-1.7	0.45	-0.12	-252.68
512.0	0.51	294.04	512.0	0.0	4.2	-1.6	1.96	1.68	-289.40
537.0	0.94	292.06	537.0	0.1	3.9	-1.4	1.72	1.72	-7.92
562.0	1.15	285.72	562.0	0.3	3.5	-1.1	0.96	0.84	-25.36
587.0	1.61	281.67	587.0	0.4	2.9	-0.7	1.88	1.84	-16.20
612.0	2.03	277.22	611.9	0.5	2.1	-0.3	1.77	1.68	-17.80
637.0	2.17	275.92	636.9	0.6	1.2	0.1	0.59	0.56	-5.20
662.0	2.29	276.35	661.9	0.7	0.2	0.6	0.48	0.48	1.72
687.0	2.50	275.43	686.9	0.8	-0.8	1.1	0.85	0.84	-3.68
712.0	3.09	273.57	711.9	0.9	-2.0	1.6	2.39	2.36	-7.44
737.0	3.48	273.52	736.8	1.0	-3.4	2.2	1.56	1.56	-0.20
762.0	3.53	272.42	761.8	1.1	-5.0	2.9	0.34	0.20	-4.40
787.0	3.63	272.55	786.7	1.2	-6.5	3.5	0.40	0.40	0.52
812.0	3.76	270.56	811.7	1.2	-8.1	4.2	0.73	0.52	-7.96
837.0	4.21	270.14	836.6	1.2	-9.9	4.8	1.80	1.80	-1.68
862.0	4.54	268.71	861.5	1.2	-11.8	5.5	1.39	1.32	-5.72
887.0	4.72	267.92	886.5	1.1	-13.8	6.2	0.76	0.72	-3.16
912.0	4.80	267.96	911.4	1.1	-15.9	6.9	0.32	0.32	0.16
937.0	4.83	266.85	936.3	1.0	-18.0	7.6	0.39	0.12	-4.44
962.0	4.89	267.56	961.2	0.9	-20.1	8.3	0.34	0.24	2.84
987.0	4.93	267.41	986.1	0.8	-22.2	9.1	0.17	0.16	-0.60
1,012.0	4.96	267.68	1,011.0	0.7	-24.4	9.8	0.15	0.12	1.08
1,037.0	4.80	267.36	1,035.9	0.6	-26.5	10.5	0.65	-0.64	-1.28
1,062.0	4.31	265.82	1,060.8	0.5	-28.5	11.1	2.02	-1.96	-6.16
1,087.0	4.14	266.66	1,085.8	0.3	-30.3	11.7	0.72	-0.68	3.36
1,112.0	3.87	266.02	1,110.7	0.2	-32.1	12.3	1.09	-1.08	-2.56
1,137.0	3.50	265.53	1,135.7	0.1	-33.7	12.7	1.49	-1.48	-1.96
1,162.0	3.25	267.18	1,160.6	0.0	-35.1	13.2	1.07	-1.00	6.60
1,187.0	3.05	265.78	1,185.6	-0.1	-36.5	13.6	0.86	-0.80	-5.60
1,212.0	2.60	265.27	1,210.5	-0.2	-37.7	14.0	1.80	-1.80	-2.04
1,237.0	2.27	265.49	1,235.5	-0.2	-38.8	14.3	1.32	-1.32	0.88
1,262.0	2.24	264.74	1,260.5	-0.3	-39.8	14.6	0.17	-0.12	-3.00
1,287.0	2.16	264.93	1,285.5	-0.4	-40.7	14.9	0.32	-0.32	0.76
1,312.0	1.76	263.12	1,310.5	-0.5	-41.6	15.1	1.62	-1.60	-7.24

SEP 10 16 2016  
 Department of Environmental Protection



Company: Antero Resources  
Project: Ritchie County WV  
Site: Charlene Pad  
Hendershot/Paige/Eppard/Brook/Bow  
Well: Brook Unit 1H  
Wellbore: Original Wellpath  
Design: As Drilled

Local Co-ordinate Reference: Well Brook Unit 1H  
TVD Reference: Patterson 347. 1118' GL + 25' KB @ 1143.0usft  
MD Reference: Patterson 347. 1118' GL + 25' KB @ 1143.0usft  
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)
1,337.0	1.52	261.34	1,335.5	-0.6	-42.3	15.3	0.98	-0.96	-7.12
1,362.0	1.39	263.21	1,360.5	-0.7	-42.9	15.5	0.55	-0.52	7.48
1,387.0	1.30	266.31	1,385.4	-0.7	-43.5	15.6	0.46	-0.36	12.40
1,412.0	1.16	268.84	1,410.4	-0.8	-44.0	15.8	0.60	-0.56	10.12
1,437.0	0.94	267.42	1,435.4	-0.8	-44.5	16.0	0.89	-0.88	-5.68
1,462.0	0.86	262.91	1,460.4	-0.8	-44.9	16.1	0.43	-0.32	-18.04
1,487.0	0.80	266.17	1,485.4	-0.8	-45.2	16.2	0.31	-0.24	13.04
1,512.0	0.63	254.55	1,510.4	-0.9	-45.5	16.3	0.89	-0.68	-46.48
1,537.0	0.63	252.14	1,535.4	-1.0	-45.8	16.3	0.11	0.00	-9.64
1,562.0	0.71	254.22	1,560.4	-1.1	-46.1	16.3	0.33	0.32	8.32
1,587.0	0.68	254.33	1,585.4	-1.1	-46.4	16.4	0.12	-0.12	0.44
1,612.0	0.73	255.52	1,610.4	-1.2	-46.7	16.4	0.21	0.20	4.76
1,637.0	0.69	254.26	1,635.4	-1.3	-47.0	16.4	0.17	-0.16	-5.04
1,662.0	0.73	262.26	1,660.4	-1.4	-47.3	16.5	0.43	0.16	32.00
1,687.0	0.69	257.87	1,685.4	-1.4	-47.6	16.6	0.27	-0.16	-17.56
1,712.0	0.69	262.41	1,710.4	-1.5	-47.9	16.6	0.22	0.00	18.16
1,737.0	0.68	261.28	1,735.4	-1.5	-48.2	16.7	0.07	-0.04	-4.52
1,762.0	0.52	260.88	1,760.4	-1.5	-48.4	16.8	0.64	-0.64	-1.60
1,787.0	0.32	252.95	1,785.4	-1.6	-48.6	16.8	0.83	-0.80	-31.72
1,812.0	0.30	245.38	1,810.4	-1.6	-48.7	16.8	0.18	-0.08	-30.26
1,837.0	0.32	249.72	1,835.4	-1.7	-48.9	16.8	0.12	0.08	17.36
1,862.0	0.39	255.26	1,860.4	-1.7	-49.0	16.8	0.31	0.28	22.16
1,887.0	0.42	256.91	1,885.4	-1.8	-49.2	16.8	0.13	0.12	6.60
1,912.0	0.39	256.29	1,910.4	-1.8	-49.4	16.9	0.12	-0.12	-2.48
1,937.0	0.38	262.02	1,935.4	-1.8	-49.5	16.9	0.16	-0.04	22.92
1,962.0	0.39	261.14	1,960.4	-1.9	-49.7	16.9	0.05	0.04	-3.52
1,987.0	0.36	252.00	1,985.4	-1.9	-49.8	16.9	0.27	-0.12	-36.56
2,012.0	0.30	258.99	2,010.4	-1.9	-50.0	17.0	0.29	-0.24	27.96
2,037.0	0.26	284.66	2,035.4	-1.9	-50.1	17.0	0.52	-0.16	102.68
2,062.0	0.24	269.13	2,060.4	-1.9	-50.2	17.1	0.28	-0.08	-62.12
2,087.0	0.26	247.77	2,085.4	-1.9	-50.3	17.1	0.38	0.08	-85.44
2,112.0	0.33	259.42	2,110.4	-2.0	-50.4	17.1	0.37	0.28	46.60
2,137.0	0.30	264.10	2,135.4	-2.0	-50.6	17.1	0.16	-0.12	18.72
2,162.0	0.16	275.57	2,160.4	-2.0	-50.7	17.2	0.59	-0.56	45.88
2,187.0	0.15	288.95	2,185.4	-2.0	-50.7	17.2	0.15	-0.04	53.52
2,212.0	0.10	224.74	2,210.4	-2.0	-50.8	17.2	0.56	-0.20	-256.84
2,237.0	0.07	208.80	2,235.4	-2.0	-50.8	17.2	0.15	-0.12	-64.56
2,262.0	0.11	170.81	2,260.4	-2.1	-50.8	17.2	0.28	0.16	-151.16
2,287.0	0.09	197.96	2,285.4	-2.1	-50.8	17.1	0.20	-0.08	108.60
2,312.0	0.12	314.26	2,310.4	-2.1	-50.8	17.1	0.72	0.12	465.20
2,337.0	0.04	246.26	2,335.4	-2.1	-50.9	17.2	0.45	-0.32	-272.00
2,362.0	0.08	41.61	2,360.4	-2.1	-50.9	17.2	0.47	0.16	621.40
2,387.0	0.02	135.95	2,385.4	-2.1	-50.9	17.2	0.34	-0.24	377.36

SEP 28 2016  
Production



<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well Brook Unit 1H
<b>Project:</b>	Ritchie County WV	<b>TVD Reference:</b>	Patterson 347 1118' GL + 25' KB @ 1143.0usft
<b>Site:</b>	Charlene Pad Hendershot/Paige/Eppard/Brook/Bow	<b>MD Reference:</b>	Patterson 347 1118' GL + 25' KB @ 1143.0usft
<b>Well:</b>	Brook Unit 1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	Antero NE

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,412.0	0.09	162.61	2,410.4	-2.1	-50.8	17.1	0.29	0.28	106.64
2,437.0	0.16	172.19	2,435.4	-2.1	-50.8	17.1	0.29	0.28	38.32
2,462.0	0.07	202.78	2,460.4	-2.2	-50.8	17.0	0.42	-0.36	122.36
2,487.0	0.07	154.44	2,485.4	-2.2	-50.8	17.0	0.23	0.00	-193.36
2,512.0	0.10	138.36	2,510.4	-2.3	-50.8	17.0	0.15	0.12	-64.32
2,537.0	0.11	148.68	2,535.4	-2.3	-50.8	16.9	0.09	0.04	41.28
2,562.0	0.09	154.42	2,560.4	-2.3	-50.8	16.9	0.09	-0.08	22.96
2,587.0	0.07	161.23	2,585.4	-2.4	-50.8	16.9	0.09	-0.08	27.24
2,612.0	0.07	168.42	2,610.4	-2.4	-50.7	16.8	0.04	0.00	28.76
2,637.0	0.10	137.28	2,635.4	-2.4	-50.7	16.8	0.22	0.12	-124.56
2,662.0	0.18	120.59	2,660.4	-2.5	-50.7	16.7	0.36	0.32	-66.76
2,687.0	0.20	123.75	2,685.4	-2.5	-50.6	16.7	0.09	0.08	12.64
2,712.0	0.15	135.22	2,710.4	-2.5	-50.5	16.6	0.24	-0.20	45.88
2,737.0	0.20	143.95	2,735.4	-2.6	-50.5	16.5	0.23	0.20	34.92
2,762.0	0.22	150.32	2,760.4	-2.7	-50.4	16.5	0.12	0.08	25.48
2,787.0	0.22	151.48	2,785.4	-2.8	-50.4	16.4	0.02	0.00	4.64
2,812.0	0.24	151.44	2,810.4	-2.9	-50.4	16.3	0.08	0.08	-0.16
2,837.0	0.19	163.54	2,835.4	-2.9	-50.3	16.2	0.27	-0.20	48.40
2,862.0	0.16	167.11	2,860.4	-3.0	-50.3	16.1	0.13	-0.12	14.28
2,887.0	0.15	156.74	2,885.4	-3.1	-50.3	16.0	0.12	-0.04	-41.48
2,912.0	0.13	150.50	2,910.4	-3.1	-50.3	16.0	0.10	-0.08	-24.96
2,937.0	0.14	165.35	2,935.4	-3.2	-50.2	15.9	0.15	0.04	59.40
2,962.0	0.12	163.97	2,960.4	-3.2	-50.2	15.8	0.08	-0.08	-5.52
2,987.0	0.15	137.87	2,985.4	-3.3	-50.2	15.8	0.27	0.12	-104.40
3,012.0	0.22	132.81	3,010.4	-3.3	-50.1	15.7	0.29	0.28	-20.24
3,037.0	0.20	129.21	3,035.4	-3.4	-50.1	15.6	0.10	-0.08	-14.40
3,062.0	0.20	128.93	3,060.4	-3.5	-50.0	15.6	0.00	0.00	-1.12
3,087.0	0.28	131.98	3,085.4	-3.5	-49.9	15.5	0.32	0.32	12.20
3,112.0	0.36	131.77	3,110.4	-3.6	-49.8	15.3	0.32	0.32	-0.64
3,137.0	0.36	135.96	3,135.4	-3.7	-49.7	15.2	0.11	0.00	16.76
3,162.0	0.30	144.46	3,160.4	-3.8	-49.6	15.1	0.31	-0.24	34.00
3,187.0	0.24	153.31	3,185.4	-3.9	-49.5	14.9	0.29	-0.24	35.40
3,212.0	0.26	152.37	3,210.4	-4.0	-49.5	14.8	0.08	0.08	-3.76
3,237.0	0.19	157.97	3,235.4	-4.1	-49.4	14.7	0.29	-0.28	22.40
3,262.0	0.10	169.73	3,260.4	-4.2	-49.4	14.7	0.38	-0.36	47.04
3,287.0	0.12	146.53	3,285.4	-4.2	-49.4	14.6	0.19	0.08	-92.80
3,312.0	0.21	130.48	3,310.4	-4.3	-49.4	14.6	0.40	0.36	-64.20
3,337.0	0.20	127.38	3,335.4	-4.3	-49.3	14.5	0.06	-0.04	-12.40
3,362.0	0.15	138.98	3,360.4	-4.4	-49.2	14.4	0.24	-0.20	46.40
3,387.0	0.13	161.52	3,385.4	-4.4	-49.2	14.4	0.23	-0.08	90.16
3,412.0	0.10	183.75	3,410.4	-4.5	-49.2	14.3	0.21	-0.12	68.92
3,437.0	0.07	156.71	3,435.4	-4.5	-49.2	14.3	0.20	-0.12	-108.16



<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well Brook Unit 1H
<b>Project:</b>	Ritchie County WV	<b>TVD Reference:</b>	Patterson 347. 1118' GL + 25' KB @ 1143.0usft
<b>Site:</b>	Charlene Pad: Hendershot/Paige/Eppard/Brook/Bow	<b>MD Reference:</b>	Patterson 347. 1118' GL + 25' KB @ 1143.0usft
<b>Well:</b>	Brook Unit 1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	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)	
3,462.0	0.08	111.82	3,460.4	-4.5	-49.2	14.2	0.23	0.04	-179.56	
3,487.0	0.11	107.87	3,485.4	-4.6	-49.1	14.2	0.12	0.12	-15.80	
3,512.0	0.13	110.75	3,510.4	-4.6	-49.1	14.2	0.08	0.08	-11.52	
3,537.0	0.12	106.28	3,535.4	-4.6	-49.0	14.1	0.06	-0.04	-17.88	
3,562.0	0.13	112.40	3,560.4	-4.6	-49.0	14.1	0.07	0.04	24.48	
3,587.0	0.14	120.29	3,585.4	-4.6	-48.9	14.1	0.08	0.04	31.56	
3,612.0	0.13	120.63	3,610.4	-4.7	-48.9	14.0	0.04	-0.04	1.36	
3,637.0	0.15	132.46	3,635.4	-4.7	-48.8	14.0	0.14	0.08	47.32	
3,662.0	0.16	152.48	3,660.4	-4.8	-48.8	13.9	0.22	0.04	80.08	
3,687.0	0.11	159.67	3,685.4	-4.8	-48.8	13.8	0.21	-0.20	26.76	
3,712.0	0.05	144.71	3,710.4	-4.8	-48.7	13.8	0.25	-0.24	-59.84	
3,737.0	0.04	50.99	3,735.4	-4.8	-48.7	13.8	0.26	-0.04	-374.88	
3,762.0	0.07	76.58	3,760.4	-4.8	-48.7	13.8	0.15	0.12	102.36	
3,787.0	0.18	131.91	3,785.4	-4.9	-48.7	13.8	0.61	0.44	221.32	
3,812.0	0.21	139.72	3,810.4	-4.9	-48.6	13.7	0.16	0.12	31.24	
3,837.0	0.13	142.62	3,835.4	-5.0	-48.6	13.6	0.32	-0.32	11.60	
3,862.0	0.10	131.40	3,860.4	-5.0	-48.5	13.6	0.15	-0.12	-44.88	
3,887.0	0.14	119.02	3,885.4	-5.0	-48.5	13.5	0.19	0.16	-49.52	
3,912.0	0.12	123.46	3,910.4	-5.1	-48.4	13.5	0.09	-0.08	17.84	
3,937.0	0.12	145.80	3,935.4	-5.1	-48.4	13.4	0.19	0.00	89.28	
3,962.0	0.10	169.36	3,960.4	-5.2	-48.4	13.4	0.20	-0.08	94.24	
3,987.0	0.08	183.62	3,985.4	-5.2	-48.4	13.3	0.12	-0.08	57.04	
4,012.0	0.04	65.38	4,010.4	-5.2	-48.4	13.3	0.42	-0.16	-472.96	
4,037.0	0.05	153.41	4,035.4	-5.2	-48.4	13.3	0.25	0.04	352.12	
4,062.0	0.19	213.20	4,060.4	-5.3	-48.4	13.3	0.68	0.56	239.16	
4,087.0	1.08	232.52	4,085.4	-5.4	-48.6	13.2	3.61	3.56	77.28	
4,112.0	1.67	234.63	4,110.4	-5.8	-49.1	13.1	2.37	2.36	8.44	
4,137.0	2.49	235.25	4,135.4	-6.3	-49.8	12.9	3.28	3.28	2.48	
4,162.0	3.55	234.04	4,160.3	-7.1	-50.9	12.5	4.25	4.24	-4.84	
4,187.0	4.79	234.45	4,185.3	-8.1	-52.4	12.1	4.96	4.96	1.64	
4,212.0	6.05	234.88	4,210.2	-9.5	-54.3	11.6	5.04	5.04	1.72	
4,237.0	7.28	235.73	4,235.0	-11.2	-56.7	10.9	4.94	4.92	3.40	
4,262.0	8.49	237.72	4,259.7	-13.0	-59.5	10.3	4.96	4.84	7.96	
4,287.0	9.63	239.19	4,284.4	-15.1	-62.9	9.6	4.65	4.56	5.88	
4,312.0	10.72	239.62	4,309.0	-17.3	-66.7	9.0	4.37	4.36	1.72	
4,337.0	11.39	239.62	4,333.6	-19.8	-70.8	8.3	2.68	2.68	0.00	
4,362.0	12.06	238.98	4,358.1	-22.4	-75.2	7.5	2.73	2.68	-2.56	
4,387.0	12.84	238.32	4,382.5	-25.2	-79.8	6.6	3.17	3.12	-2.84	
4,412.0	13.49	237.29	4,406.8	-28.2	-84.6	5.8	2.76	2.60	-4.12	
4,437.0	13.96	237.12	4,431.1	-31.4	-89.6	4.5	1.89	1.88	-0.68	
4,462.0	14.16	235.44	4,455.4	-34.8	-94.7	3.3	1.82	0.80	-6.72	
4,487.0	14.30	234.39	4,479.6	-38.3	-99.7	1.9	1.17	0.56	-4.20	
4,512.0	14.37	234.02	4,503.8	-41.8	-104.7	0.4	0.46	0.28	-1.48	



<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well Brook Unit 1H
<b>Project:</b>	Ritchie County WV	<b>TVD Reference:</b>	Patterson 347 1118' GL + 25' KB @ 1143.0usft
<b>Site:</b>	Charlene Pad: Hendershot/Paige/Eppard/Brook/Bow	<b>MD Reference:</b>	Patterson 347 1118' GL + 25' KB @ 1143.0usft
<b>Well:</b>	Brook Unit 1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	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)
4,537.0	13.98	232.68	4,528.0	-45.6	-109.6	-1.1	2.04	-1.56	-5.36
4,562.0	13.95	231.77	4,552.3	-49.3	-114.4	-2.7	0.89	-0.12	-3.64
4,567.0	14.00	231.69	4,576.6	-53.0	-119.1	-4.4	0.21	0.20	-0.32
4,612.0	13.89	231.55	4,600.8	-56.8	-123.9	-6.1	0.46	-0.44	-0.56
4,637.0	13.86	231.07	4,625.1	-60.5	-128.5	-7.8	0.48	-0.12	-1.92
4,662.0	14.11	231.02	4,649.4	-64.3	-133.2	-9.6	1.00	1.00	-0.20
4,687.0	14.64	231.06	4,673.6	-68.2	-138.1	-11.4	2.12	2.12	0.16
4,712.0	15.01	231.11	4,697.7	-72.2	-143.0	-13.2	1.48	1.48	0.20
4,737.0	15.46	230.79	4,721.9	-76.4	-148.1	-15.2	1.83	1.80	-1.28
4,762.0	15.81	230.47	4,745.9	-80.6	-153.3	-17.2	1.44	1.40	-1.28
4,787.0	16.07	229.58	4,770.0	-85.0	-158.6	-19.3	1.43	1.04	-3.56
4,812.0	16.22	227.86	4,794.0	-89.6	-163.8	-21.6	2.00	0.60	-6.88
4,837.0	16.48	226.81	4,818.0	-94.4	-169.0	-24.1	1.57	1.04	-4.20
4,862.0	16.58	226.15	4,841.9	-99.3	-174.2	-26.7	0.85	0.40	-2.64
4,887.0	16.54	225.05	4,865.9	-104.3	-179.3	-29.4	1.26	-0.16	-4.40
4,912.0	16.61	224.43	4,889.9	-109.4	-184.3	-32.2	0.76	0.28	-2.48
4,937.0	16.86	224.73	4,913.8	-114.5	-189.3	-35.0	1.06	1.00	1.20
4,962.0	17.45	224.93	4,937.7	-119.7	-194.5	-37.9	2.37	2.36	0.80
4,987.0	17.98	225.32	4,961.5	-125.1	-199.9	-40.9	2.17	2.12	1.56
5,012.0	18.64	226.47	4,985.2	-130.5	-205.6	-43.8	3.01	2.64	4.60
5,037.0	19.38	227.77	5,008.9	-136.1	-211.5	-46.7	3.41	2.96	5.20
5,062.0	19.96	228.23	5,032.4	-141.7	-217.8	-49.6	2.40	2.32	1.84
5,087.0	20.32	228.69	5,055.9	-147.4	-224.2	-52.5	1.57	1.44	1.84
5,112.0	20.81	229.68	5,079.3	-153.2	-230.9	-55.3	2.40	1.96	3.96
5,137.0	21.36	230.12	5,102.6	-159.0	-237.7	-58.1	2.29	2.20	1.76
5,162.0	21.77	230.34	5,125.9	-164.8	-244.8	-60.9	1.67	1.64	0.88
5,187.0	22.27	230.44	5,149.1	-170.8	-252.0	-63.7	2.01	2.00	0.40
5,212.0	22.74	230.36	5,172.2	-176.9	-259.4	-66.6	1.88	1.88	-0.32
5,237.0	23.23	230.31	5,195.2	-183.1	-266.9	-69.5	1.96	1.96	-0.20
5,262.0	23.92	230.08	5,218.1	-189.5	-274.6	-72.6	2.78	2.76	-0.92
5,287.0	24.49	230.02	5,240.9	-196.1	-282.5	-75.7	2.28	2.28	-0.24
5,312.0	24.92	230.09	5,263.6	-202.8	-290.5	-78.9	1.72	1.72	0.28
5,337.0	25.12	230.03	5,286.2	-209.6	-298.6	-82.2	0.81	0.80	-0.24
5,362.0	25.03	229.78	5,308.9	-216.4	-306.7	-85.5	0.56	-0.36	-1.00
5,387.0	25.14	229.83	5,331.5	-223.3	-314.8	-88.8	0.45	0.44	0.20
5,412.0	25.46	230.19	5,354.1	-230.1	-323.0	-92.1	1.42	1.28	1.44
5,437.0	25.38	230.50	5,376.7	-237.0	-331.2	-95.3	0.62	-0.32	1.24
5,462.0	25.23	230.50	5,399.3	-243.8	-339.5	-98.5	0.60	-0.60	0.00
5,487.0	25.45	230.55	5,421.9	-250.6	-347.7	-101.7	0.88	0.88	0.20
5,512.0	25.91	230.51	5,444.4	-257.5	-356.1	-105.0	1.84	1.84	-0.16
5,537.0	25.50	230.28	5,467.0	-264.4	-364.4	-108.2	1.69	-1.64	-0.92
5,562.0	25.20	230.12	5,489.6	-271.2	-372.7	-111.5	1.23	-1.20	-0.64





<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well Brook Unit 1H
<b>Project:</b>	Ritchie County WV	<b>TVD Reference:</b>	Patterson 347 1118' GL + 25' KB @ 1143.0usft
<b>Site:</b>	Charlene Pad: Hendershot/Paige/Eppard/Brook/Bow	<b>MD Reference:</b>	Patterson 347 1118' GL + 25' KB @ 1143.0usft
<b>Well:</b>	Brook Unit 1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	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)
5,587.0	25.83	230.58	5,512.1	-278.1	-380.9	-114.7	1.89	1.72	1.84
5,612.0	25.77	231.15	5,534.7	-284.9	-389.3	-117.9	1.14	0.56	2.28
5,637.0	25.24	230.81	5,557.2	-291.7	-397.7	-121.1	2.20	-2.12	-1.36
5,662.0	25.04	230.20	5,579.9	-298.5	-405.9	-124.3	1.31	-0.80	-2.44
5,687.0	25.45	230.18	5,602.5	-305.3	-414.1	-127.5	1.64	1.64	-0.08
5,712.0	25.67	230.00	5,625.0	-312.2	-422.4	-130.8	0.93	0.88	-0.72
5,737.0	25.30	229.14	5,647.6	-319.2	-430.6	-134.2	2.09	-1.48	-3.44
5,762.0	24.94	228.44	5,670.2	-326.2	-438.5	-137.7	1.87	-1.44	-2.80
5,785.0	25.40	228.54	5,691.0	-332.7	-445.9	-140.9	2.01	2.00	0.43
<b>Last SDI Gyro @ 5785 MD</b>									
5,785.5	25.41	228.54	5,691.5	-332.8	-446.0	-141.0	2.01	2.00	0.42
5,915.0	23.90	223.21	5,809.2	-370.3	-484.8	-161.2	2.07	-1.17	-4.12
<b>First SDI MWD @ 5915 MD</b>									
5,944.0	23.24	220.73	5,835.8	-378.9	-492.6	-166.3	4.11	-2.28	-8.55
5,976.0	22.72	221.02	5,865.2	-388.4	-500.7	-172.0	1.66	-1.63	0.91
6,007.0	24.94	232.27	5,893.6	-396.9	-509.8	-176.5	16.29	7.16	36.29
6,039.0	29.19	244.95	5,922.1	-404.4	-522.3	-178.7	22.33	13.28	39.83
6,070.0	32.05	250.59	5,948.8	-410.3	-536.9	-178.7	13.07	9.23	18.19
6,101.0	32.14	257.49	5,975.1	-414.8	-552.7	-177.0	11.82	0.29	22.26
6,133.0	31.61	260.23	6,002.3	-418.1	-569.3	-173.8	4.81	-1.66	8.56
6,164.0	31.75	270.19	6,028.7	-419.4	-585.4	-169.0	16.86	0.45	32.13
6,196.0	33.73	278.50	6,055.6	-418.1	-602.7	-161.3	15.33	6.19	25.97
6,227.0	36.15	285.99	6,081.0	-414.3	-620.0	-151.2	15.88	7.81	24.18
6,258.0	37.81	292.10	6,105.8	-408.2	-637.6	-139.0	13.00	5.35	19.71
6,290.0	39.95	297.14	6,130.7	-399.8	-655.8	-124.4	11.93	6.69	15.75
6,321.0	41.70	301.00	6,154.2	-390.0	-673.5	-108.6	9.90	5.65	12.45
6,352.0	42.96	303.20	6,177.1	-378.9	-691.2	-91.7	6.27	4.06	7.10
6,384.0	44.11	305.00	6,200.3	-366.5	-709.4	-73.4	5.28	3.59	5.63
6,415.0	46.24	307.29	6,222.1	-353.5	-727.2	-54.7	8.64	6.87	7.39
6,420.0	46.75	307.85	6,225.6	-351.3	-730.1	-51.6	13.00	10.21	11.10
<b>Middlesex @ 6420 MD</b>									
6,447.0	49.55	310.69	6,243.6	-338.6	-745.6	-33.9	13.00	10.37	10.54
6,478.0	52.48	312.34	6,263.1	-322.6	-763.7	-12.3	10.32	9.45	5.32
6,510.0	55.04	314.93	6,282.0	-304.8	-782.3	11.2	10.32	8.00	8.09
6,541.0	57.29	317.63	6,299.3	-286.2	-800.1	35.1	10.25	7.26	8.71
6,572.0	60.17	320.18	6,315.4	-266.2	-817.5	60.2	11.65	9.29	8.23
6,600.0	63.15	322.14	6,328.6	-247.0	-833.0	83.7	12.29	10.64	6.99
<b>Burket @ 6600 MD</b>									
6,603.0	63.47	322.34	6,330.0	-244.9	-834.6	86.3	12.29	10.69	6.78
6,635.0	66.46	324.30	6,343.5	-221.7	-851.9	114.4	10.87	9.34	6.13
6,663.0	69.04	326.93	6,354.1	-200.3	-866.5	139.7	12.68	9.22	9.41
<b>Tully @ 6663 MD</b>									
6,666.0	69.32	327.21	6,355.2	-197.9	-868.1	142.4	12.68	9.30	9.22
6,698.0	71.35	329.90	6,366.0	-172.2	-883.8	172.2	10.14	6.34	8.41

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<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well Brook Unit 1H
<b>Project:</b>	Ritchie County WV	<b>TVD Reference:</b>	Patterson 347. 1118' GL + 25' KB @ 1143.0usft
<b>Site:</b>	Charlene Pad: Hendershot/Paige/Eppard/Brook/Bow	<b>MD Reference:</b>	Patterson 347. 1118' GL + 25' KB @ 1143.0usft
<b>Well:</b>	Brook Unit 1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	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)
6,715.0	72.36	331.87	6,371.3	-158.1	-891.6	188.2	12.53	5.95	11.60
<b>Marcellus @ 6715 MD</b>									
6,729.0	73.21	333.48	6,375.4	-146.2	-897.8	201.5	12.53	6.06	11.48
6,760.0	76.56	337.67	6,383.5	-119.0	-910.1	231.4	16.94	10.81	13.52
6,792.0	80.36	340.02	6,389.9	-89.7	-921.5	262.7	13.88	11.88	7.34
6,823.0	83.07	341.91	6,394.4	-60.7	-931.5	293.4	10.62	8.74	6.10
6,850.0	83.58	342.20	6,397.5	-35.2	-939.7	320.1	2.17	1.89	1.07
6,881.0	87.22	342.13	6,400.0	-5.8	-949.2	350.9	11.74	11.74	-0.23
6,913.0	90.57	342.21	6,400.6	24.6	-959.0	382.8	10.47	10.47	0.25
6,976.0	91.01	341.03	6,399.7	84.4	-978.8	445.7	2.00	0.70	-1.87
7,070.0	90.07	338.02	6,398.9	172.5	-1,011.7	539.7	3.35	-1.00	-3.20
7,164.0	88.99	337.85	6,399.6	259.6	-1,047.0	633.6	1.16	-1.15	-0.18
7,258.0	88.79	336.81	6,401.4	346.3	-1,083.2	727.6	1.13	-0.21	-1.11
7,352.0	88.46	337.48	6,403.7	432.9	-1,119.7	821.6	0.79	-0.35	-0.71
7,446.0	88.93	337.14	6,405.8	519.6	-1,156.0	915.6	0.62	0.50	-0.36
7,540.0	89.70	336.69	6,407.0	606.0	-1,192.8	1,009.5	0.95	0.82	-0.48
7,635.0	89.09	337.22	6,408.0	693.5	-1,230.0	1,104.5	0.85	-0.64	0.56
7,729.0	87.58	337.95	6,410.7	780.3	-1,265.9	1,198.5	1.78	-1.61	0.78
7,823.0	88.25	337.69	6,414.1	867.3	-1,301.3	1,292.4	0.76	0.71	-0.28
7,917.0	88.93	336.99	6,416.4	954.0	-1,337.5	1,386.4	1.04	0.72	-0.74
8,012.0	89.63	336.25	6,417.6	1,041.2	-1,375.2	1,481.3	1.07	0.74	-0.78
8,106.0	89.70	338.50	6,418.2	1,128.0	-1,411.4	1,575.3	2.39	0.07	2.39
8,200.0	88.96	338.74	6,419.3	1,215.5	-1,445.6	1,669.3	0.83	-0.79	0.26
8,294.0	89.26	338.62	6,420.7	1,303.1	-1,479.8	1,763.3	0.34	0.32	-0.13
8,388.0	90.50	338.93	6,420.9	1,390.7	-1,513.8	1,857.3	1.36	1.32	0.33
8,482.0	89.56	339.68	6,420.9	1,478.6	-1,547.1	1,951.2	1.28	-1.00	0.80
8,576.0	90.54	340.68	6,420.8	1,567.0	-1,578.9	2,045.2	1.49	1.04	1.06
8,670.0	89.30	337.30	6,420.9	1,654.8	-1,612.6	2,139.1	3.83	-1.32	-3.60
8,764.0	89.40	336.60	6,422.0	1,741.3	-1,649.4	2,233.1	0.75	0.11	-0.74
8,858.0	90.57	337.33	6,422.0	1,827.8	-1,686.2	2,327.1	1.47	1.24	0.78
8,952.0	88.96	336.44	6,422.4	1,914.2	-1,723.1	2,421.1	1.96	-1.71	-0.95
9,046.0	90.81	336.46	6,422.6	2,000.4	-1,760.7	2,515.0	1.97	1.97	0.02
9,140.0	89.77	336.80	6,422.1	2,086.7	-1,798.0	2,609.0	1.16	-1.11	0.36
9,234.0	89.93	336.84	6,422.4	2,173.1	-1,835.0	2,703.0	0.18	0.17	0.04
9,328.0	89.93	338.70	6,422.5	2,260.1	-1,870.5	2,797.0	1.98	0.00	1.98
9,422.0	90.00	340.97	6,422.5	2,348.3	-1,902.9	2,890.9	2.42	0.07	2.41
9,517.0	89.53	342.32	6,422.9	2,438.5	-1,932.8	2,985.7	1.50	-0.49	1.42
9,610.0	89.83	338.03	6,423.5	2,525.9	-1,964.4	3,078.6	4.62	0.32	-4.61
9,704.0	90.37	337.13	6,423.3	2,612.8	-2,000.2	3,172.6	1.12	0.57	-0.96
9,798.0	89.63	335.99	6,423.3	2,699.1	-2,037.6	3,266.6	1.45	-0.79	-1.21
9,892.0	91.48	336.41	6,422.4	2,785.1	-2,075.5	3,360.6	2.02	1.97	0.45
9,987.0	90.24	337.37	6,420.9	2,872.4	-2,112.8	3,455.5	1.65	-1.31	1.01

REC-0716ED  
0.50  
0.82  
-0.64  
0.78  
0.71  
0.72  
0.74  
0.07  
SFB 11/11/2016  
Environmental Protection



**Company:** Antero Resources  
**Project:** Ritchie County WV  
**Site:** Charlene Pad:  
 Hendershot/Paige/Eppard/Brook/Bow  
**Well:** Brook Unit 1H  
**Wellbore:** Original Wellpath  
**Design:** As Drilled

**Local Co-ordinate Reference:** Well Brook Unit 1H  
**TVD Reference:** Patterson 347: 1118' GL + 25' KB @ 1143.0usft  
**MD Reference:** Patterson 347: 1118' GL + 25' KB @ 1143.0usft  
**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)
10,081.0	91.04	337.84	6,419.9	2,959.3	-2,148.6	3,549.5	0.99	0.85	0.50
10,175.0	90.44	337.76	6,418.7	3,046.4	-2,184.1	3,643.5	0.84	-0.64	-0.09
10,269.0	90.17	334.88	6,418.2	3,132.4	-2,221.9	3,737.5	3.08	-0.29	-3.06
10,363.0	89.73	337.52	6,418.3	3,218.4	-2,259.8	3,831.4	2.85	-0.47	2.81
10,457.0	89.83	338.36	6,418.6	3,305.6	-2,295.1	3,925.4	0.90	0.11	0.89
10,551.0	90.54	339.34	6,418.3	3,393.2	-2,329.0	4,019.4	1.29	0.76	1.04
10,646.0	90.54	339.17	6,417.4	3,482.1	-2,362.7	4,114.4	0.18	0.00	-0.18
10,740.0	90.44	337.39	6,416.6	3,569.4	-2,397.5	4,208.4	1.90	-0.11	-1.89
10,834.0	90.74	337.24	6,415.7	3,656.1	-2,433.7	4,302.3	0.36	0.32	-0.16
10,928.0	90.24	334.93	6,414.9	3,742.0	-2,471.8	4,396.3	2.51	-0.53	-2.46
11,022.0	89.46	337.15	6,415.1	3,827.9	-2,510.0	4,490.2	2.50	-0.83	2.36
11,116.0	89.33	336.71	6,416.1	3,914.4	-2,546.8	4,584.2	0.49	-0.14	-0.47
11,211.0	90.30	336.96	6,416.4	4,001.7	-2,584.2	4,679.2	1.05	1.02	0.26
11,305.0	90.34	338.14	6,415.9	4,088.6	-2,620.1	4,773.2	1.26	0.04	1.26
11,399.0	90.60	338.14	6,415.1	4,175.9	-2,655.1	4,867.2	0.28	0.28	0.00
11,493.0	90.70	338.14	6,414.0	4,263.1	-2,690.1	4,961.2	0.11	0.11	0.00
11,587.0	91.24	337.85	6,412.4	4,350.2	-2,725.3	5,055.2	0.65	0.57	-0.31
11,681.0	90.10	338.53	6,411.3	4,437.5	-2,760.2	5,149.2	1.41	-1.21	0.72
11,776.0	90.30	337.76	6,411.0	4,525.7	-2,795.6	5,244.1	0.84	0.21	-0.81
11,870.0	89.76	338.45	6,411.0	4,612.9	-2,830.6	5,338.1	0.93	-0.57	0.73
11,964.0	90.00	337.93	6,411.2	4,700.2	-2,865.6	5,432.1	0.61	0.26	-0.55
12,058.0	90.37	339.94	6,410.9	4,787.9	-2,899.4	5,526.1	2.17	0.39	2.14
12,152.0	90.17	339.01	6,410.4	4,875.9	-2,932.3	5,620.1	1.01	-0.21	-0.99
12,246.0	90.64	338.21	6,409.8	4,963.4	-2,966.6	5,714.1	0.99	0.50	-0.85
12,341.0	90.13	339.40	6,409.1	5,052.0	-3,000.9	5,809.1	1.36	-0.54	1.25
12,435.0	90.20	339.03	6,408.8	5,139.9	-3,034.3	5,903.0	0.40	0.07	-0.39
12,528.0	91.04	339.88	6,407.8	5,226.9	-3,066.9	5,996.0	1.28	0.90	0.91
12,623.0	89.50	339.88	6,407.4	5,316.1	-3,099.8	6,091.0	1.63	-1.62	-0.21
12,717.0	90.03	340.09	6,407.8	5,404.4	-3,132.1	6,184.9	0.71	0.56	0.44
12,811.0	90.13	338.55	6,407.6	5,492.3	-3,165.3	6,278.9	1.64	0.11	-1.64
12,905.0	90.64	338.88	6,407.0	5,579.8	-3,199.6	6,372.9	0.56	0.54	0.14
12,999.0	90.77	338.32	6,405.9	5,667.3	-3,234.0	6,466.8	0.41	0.14	-0.38
13,093.0	90.67	337.13	6,404.7	5,754.2	-3,269.6	6,560.8	1.27	-0.11	-1.27
13,187.0	90.54	336.23	6,403.7	5,840.6	-3,306.8	6,654.8	0.97	-0.14	-0.96
13,281.0	90.03	336.99	6,403.2	5,926.8	-3,344.2	6,748.8	0.97	-0.54	0.81
13,375.0	90.00	336.48	6,403.2	6,013.2	-3,381.3	6,842.8	0.54	-0.03	-0.54
13,469.0	89.60	335.64	6,403.5	6,099.1	-3,419.4	6,936.7	0.99	-0.43	-0.89
13,563.0	90.30	338.60	6,403.6	6,185.7	-3,456.0	7,030.7	3.24	0.74	3.15
13,657.0	90.50	338.42	6,402.9	6,273.2	-3,490.4	7,124.7	0.29	0.21	-0.19
13,751.0	90.44	337.17	6,402.2	6,360.2	-3,525.9	7,218.7	1.33	-0.06	-1.33
13,845.0	91.17	337.15	6,400.9	6,446.8	-3,562.4	7,312.7	0.78	0.78	-0.02
13,939.0	88.96	337.60	6,400.7	6,533.6	-3,598.6	7,406.6	2.40	-2.35	0.48
14,033.0	90.17	336.48	6,401.5	6,620.1	-3,635.2	7,500.6	1.75	1.29	-1.19



<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well Brook Unit 1H
<b>Project:</b>	Ritchie County WV	<b>TVD Reference:</b>	Patterson 347: 1118' GL + 25' KB @ 1143.0usft
<b>Site:</b>	Charlene Pad: Hendershot/Paige/Eppard/Brook/Bow	<b>MD Reference:</b>	Patterson 347: 1118' GL + 25' KB @ 1143.0usft
<b>Well:</b>	Brook Unit 1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	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)	
14,128.0	90.23	337.23	6,401.1	6,707.5	-3,672.6	7,595.6	0.79	0.06	0.79	
14,222.0	88.69	338.76	6,402.0	6,794.6	-3,707.8	7,689.6	2.31	-1.64	1.63	
14,316.0	88.36	337.44	6,404.4	6,881.8	-3,742.8	7,783.6	1.45	-0.35	-1.40	
14,410.0	88.39	337.80	6,407.1	6,968.7	-3,778.6	7,877.5	0.38	0.03	0.38	
14,504.0	90.54	339.53	6,408.0	7,056.2	-3,812.8	7,971.5	2.94	2.29	1.84	
14,599.0	91.34	340.07	6,406.4	7,145.4	-3,845.6	8,066.4	1.02	0.84	0.57	
14,679.0	91.71	339.84	6,404.3	7,220.5	-3,873.0	8,146.4	0.54	0.46	-0.29	
<b>Last SDI MWD @ 14679 MD</b>										
14,741.0	91.71	339.84	6,402.4	7,278.7	-3,894.4	8,208.3	0.00	0.00	0.00	
<b>Projection To Bit @ 14741 MD / 6402 TVD</b>										

**Formations**

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,420.0	6,225.6	Middlesex @ 6420 MD		0.00	
6,600.0	6,328.6	Burket @ 6600 MD		0.00	
6,663.0	6,354.1	Tully @ 6663 MD		0.00	
6,715.0	6,371.3	Marcellus @ 6715 MD		0.00	

**Design Annotations**

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
112.0	112.0	0.0	1.1	First SDI Gyro @ 100 MD
5,785.0	5,691.0	-332.7	-445.9	Last SDI Gyro @ 5785 MD
5,915.0	5,809.2	-370.3	-484.8	First SDI MWD @ 5915 MD
14,679.0	6,404.3	7,220.5	-3,873.0	Last SDI MWD @ 14679 MD
14,741.0	6,402.4	7,278.7	-3,894.4	Projection To Bit @ 14741 MD / 6402 TVD

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_