



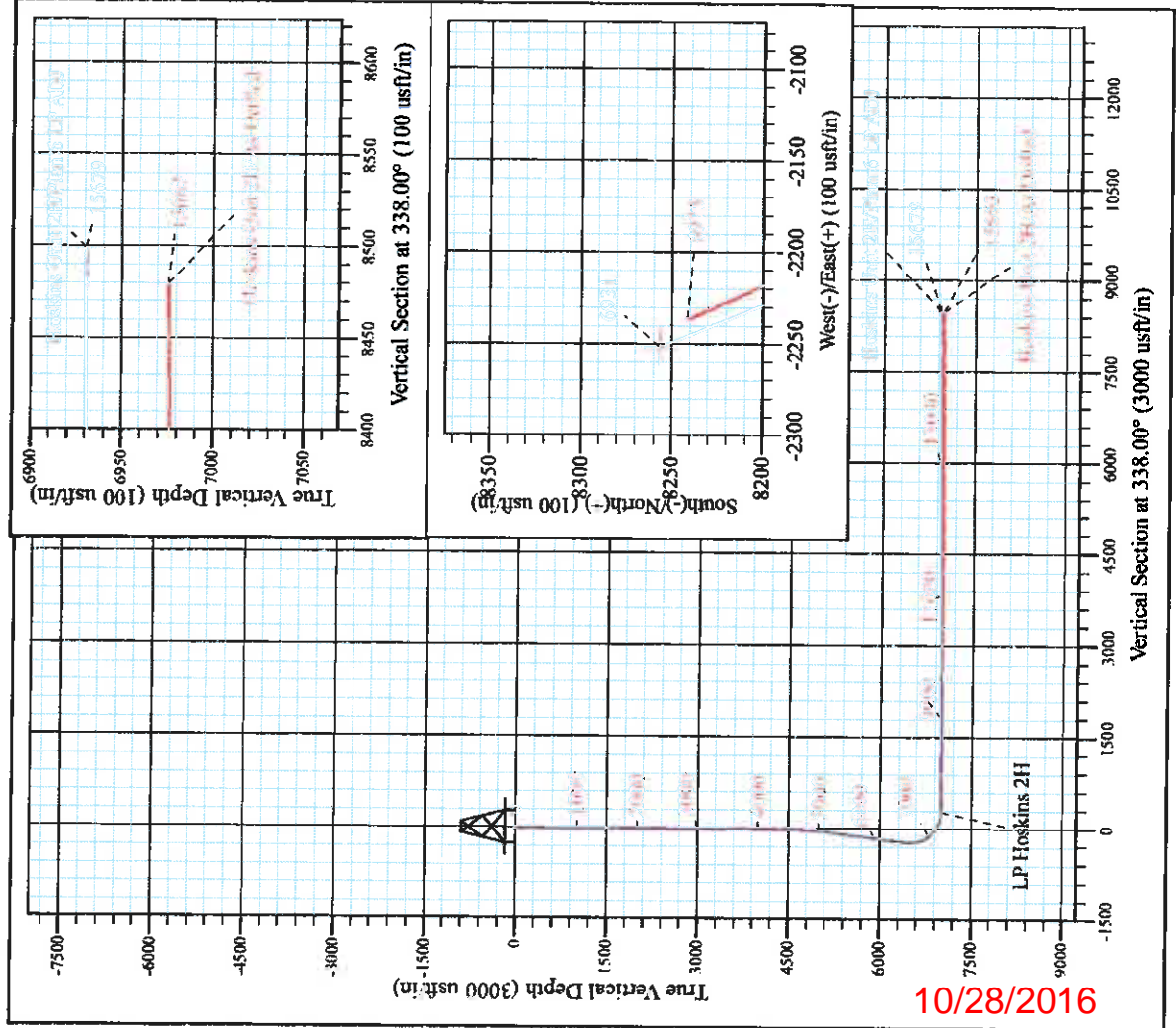
Hamilton Pad: Costlow/Hoskins/Hoskins/Knight  
 Hoskins Unit 2H  
 Plan 6 LP ADJ  
 Precision 525: 11.59' GL + 19' KB @ 1178.0 usf  
 Doddridge County WV

PROJECT DETAILS:  
 Geodetic System: Universal Transverse Mercator (US Survey Feet)  
 Datum: NAD 1927 (NAD83 CONUS)  
 Spheroid: Clarke 1866  
 Zone: Zone 17N (84 W to 78 W)  
 System Datum: Mean Sea Level

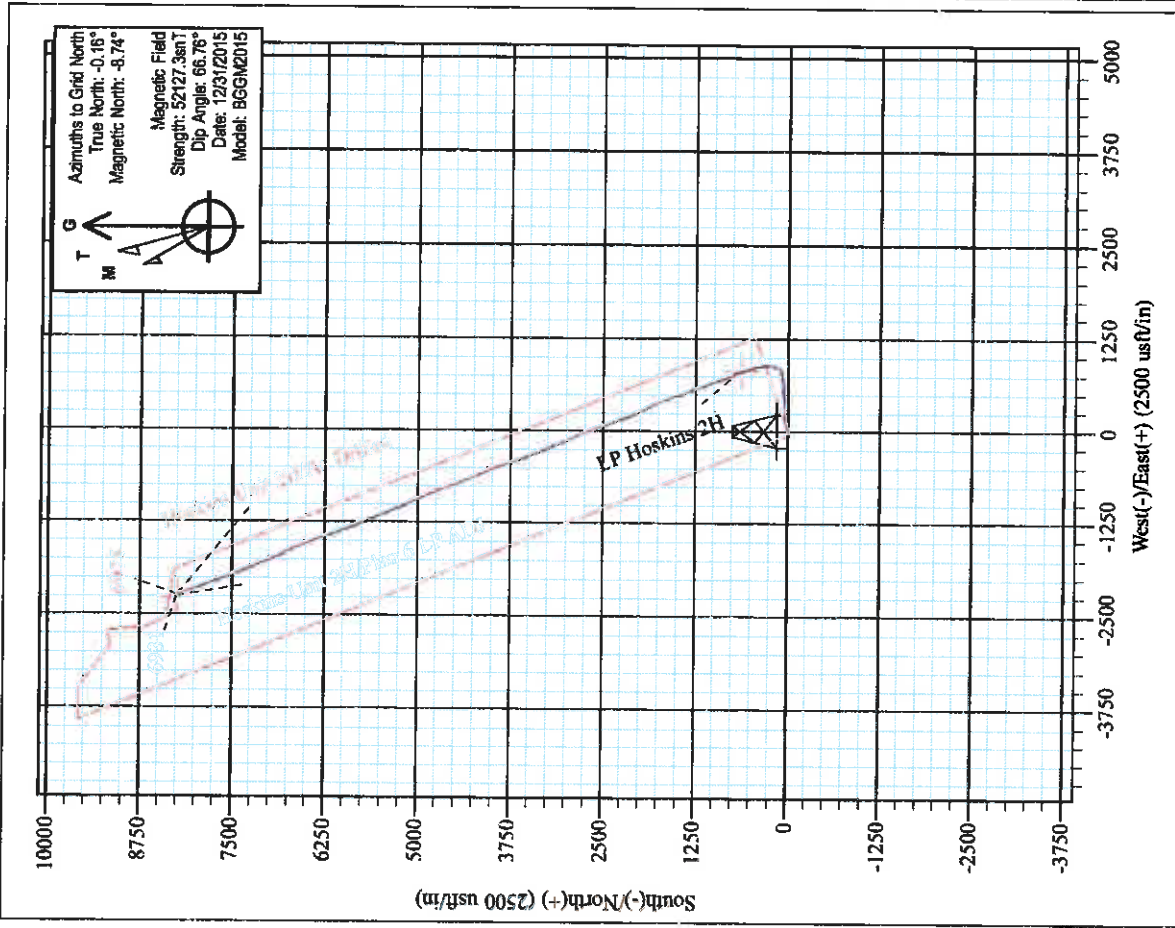


**WELL DETAILS: Hoskins Unit 2H SHL**

+N/-S	+E/-W	Northing	Latitude	Longitude
0.0	0.0	14295911.01	39° 22' 3.652 N	80° 44' 37.487 W



10/28/2016



**Hoskins Unit 2H**  
 Approx. **BHL**  
 89° 23' 25.202 N 80° 45' 5.685 W

Shane Rhodes  
 11:09, January 13, 2016  
 Scientific Drilling International  
 124 Vista Drive  
 Charlevoix, PA 15022



## **Antero Resources**

**Doddridge County WV**

**Hamilton Pad: Costlow/Gaskins/Hoskins/Knight**

**Hoskins Unit 2H**

**Original Wellpath**

**Design: As Drilled**

## **Standard Survey Report**

**13 January, 2016**



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SEP 21 2016

WV Department of  
Environmental Protection  
10/28/2016



<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well Hoskins Unit 2H
<b>Project:</b>	Doddridge County WV	<b>TVD Reference:</b>	Precision 525: 1158' GL + 19' KB @ 1178.0usft
<b>Site:</b>	Hamilton Pad: Costlow/Gaskins/Hoskins/Knight	<b>MD Reference:</b>	Precision 525: 1158' GL + 19' KB @ 1178.0usft
<b>Well:</b>	Hoskins Unit 2H	<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>	Doddridge County WV, McClellan District		
<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>	Hamilton Pad: Costlow/Gaskins/Hoskins/Knight, Site Center: Hoskins 2H				
<b>Site Position:</b>	<b>Northing:</b>	14,295,911.01 usft	<b>Latitude:</b>	39° 22' 3.652 N	
<b>From:</b> Map	<b>Easting:</b>	1,712,840.20 usft	<b>Longitude:</b>	80° 44' 37.487 W	
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.16 °

<b>Well</b>	Hoskins Unit 2H, Marcellus					
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b>	14,295,911.01 usft	<b>Latitude:</b>	39° 22' 3.652 N
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b>	1,712,840.20 usft	<b>Longitude:</b>	80° 44' 37.487 W
<b>Position Uncertainty</b>		2.0 usft	<b>Wellhead Elevation:</b>	1,178.0 usft	<b>Ground Level:</b>	1,159.0 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>
	BGGM2014	10/8/2014	-8.52	66.90	52,252
	BGGM2015	12/31/2015	-8.58	66.76	52,127

<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		338.00

<b>Survey Program</b>	Date 1/13/2016				
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
108.0	6,428.8	Survey #7 Final Gyro Survey (Original We	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4	
6,492.0	15,663.0	Survey #8 - SDI MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Burid Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
108.0	0.11	244.36	108.0	0.0	-0.1	0.0	0.10	0.10	0.00	
<b>First Gyro @ 108</b>										
133.0	0.12	264.09	133.0	-0.1	-0.1	0.0	0.16	0.04	78.92	
158.0	0.08	247.77	158.0	-0.1	-0.2	0.0	0.19	-0.16	-65.28	
183.0	0.05	268.50	183.0	-0.1	-0.2	0.0	0.15	-0.12	82.92	
208.0	0.05	225.41	208.0	-0.1	-0.2	0.0	0.15	0.00	-172.36	
233.0	0.02	180.20	233.0	-0.1	-0.2	0.0	0.15	-0.12	-180.84	



<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well Hoskins Unit 2H
<b>Project:</b>	Doddridge County WV	<b>TVD Reference:</b>	Precision 525: 1159' GL + 19' KB @ 1178.0usft
<b>Site:</b>	Hamilton Pad. Costlow/Gaskins/Hoskins/Knight	<b>MD Reference:</b>	Precision 525: 1159' GL + 19' KB @ 1178.0usft
<b>Well:</b>	Hoskins Unit 2H	<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)
258.0	0.05	7.66	258.0	-0.1	-0.2	0.0	0.28	0.12	-690.16
283.0	0.03	90.17	283.0	-0.1	-0.2	0.0	0.22	-0.08	330.04
308.0	0.05	132.91	308.0	-0.1	-0.2	0.0	0.14	0.08	170.96
333.0	0.02	347.48	333.0	-0.1	-0.2	0.0	0.27	-0.12	-581.72
358.0	0.03	188.97	358.0	-0.1	-0.2	0.0	0.20	0.04	-634.04
383.0	0.10	60.44	383.0	-0.1	-0.2	0.0	0.48	0.28	-514.12
408.0	0.43	72.02	408.0	0.0	-0.1	0.0	1.33	1.32	46.32
433.0	1.25	84.95	433.0	0.0	0.3	-0.1	3.35	3.28	51.72
458.0	1.72	87.48	458.0	0.0	0.9	-0.3	1.90	1.88	10.12
483.0	1.99	89.19	483.0	0.1	1.7	-0.6	1.10	1.08	6.84
508.0	2.32	90.66	508.0	0.1	2.7	-0.9	1.34	1.32	5.88
533.0	2.73	93.05	532.9	0.0	3.8	-1.4	1.69	1.64	9.56
558.0	3.11	92.57	557.9	0.0	5.0	-1.9	1.52	1.52	-1.92
583.0	3.76	93.58	582.9	-0.1	6.5	-2.6	2.81	2.60	4.04
608.0	4.18	91.95	607.8	-0.2	8.3	-3.3	1.74	1.68	-6.52
633.0	4.56	92.37	632.7	-0.3	10.2	-4.1	1.53	1.52	1.68
658.0	4.57	91.34	657.6	-0.3	12.2	-4.9	0.33	0.04	-4.12
683.0	4.96	86.95	682.6	-0.3	14.2	-5.6	2.13	1.56	-17.56
708.0	5.10	86.13	707.5	-0.2	16.4	-6.3	0.63	0.56	-3.28
733.0	5.16	79.25	732.4	0.1	18.6	-6.9	2.47	0.24	-27.52
758.0	5.33	75.11	757.3	0.6	20.9	-7.2	1.66	0.68	-16.56
783.0	5.39	73.22	782.1	1.3	23.1	-7.5	0.75	0.24	-7.56
808.0	5.65	65.24	807.0	2.1	25.4	-7.5	3.24	1.04	-31.92
833.0	5.61	63.49	831.9	3.2	27.6	-7.4	0.71	-0.16	-7.00
858.0	5.75	64.34	856.8	4.3	29.8	-7.2	0.65	0.56	3.40
883.0	5.42	61.15	881.7	5.4	32.0	-7.0	1.81	-1.32	-12.76
908.0	4.45	56.18	906.6	6.5	33.8	-6.6	4.24	-3.88	-19.88
933.0	4.12	55.07	931.5	7.5	35.3	-6.2	1.36	-1.32	-4.44
958.0	3.94	54.94	956.4	8.6	36.8	-5.8	0.72	-0.72	-0.52
983.0	3.73	56.86	981.4	9.5	38.2	-5.5	0.98	-0.84	7.68
1,008.0	3.39	56.52	1,006.3	10.3	39.5	-5.2	1.36	-1.36	-1.36
1,033.0	2.94	57.93	1,031.3	11.1	40.6	-4.9	1.83	-1.80	5.64
1,058.0	2.87	57.94	1,056.3	11.8	41.7	-4.7	0.28	-0.28	0.04
1,083.0	2.45	56.20	1,081.2	12.4	42.7	-4.5	1.71	-1.68	-6.96
1,108.0	2.13	53.97	1,106.2	13.0	43.5	-4.3	1.33	-1.28	-8.92
1,133.0	2.07	53.56	1,131.2	13.5	44.2	-4.0	0.25	-0.24	-1.64
1,158.0	1.90	53.26	1,156.2	14.0	44.9	-3.8	0.68	-0.68	-1.20
1,183.0	1.62	55.03	1,181.2	14.5	45.5	-3.6	1.14	-1.12	7.08
1,208.0	1.44	55.56	1,206.2	14.9	46.1	-3.5	0.72	-0.72	2.12
1,233.0	1.41	57.52	1,231.2	15.2	46.6	-3.4	0.23	-0.12	7.84
1,258.0	1.21	59.08	1,256.2	15.5	47.1	-3.3	0.81	-0.80	6.24
1,283.0	0.97	57.79	1,281.2	15.7	47.5	-3.2	0.96	-0.96	-5.16
1,308.0	0.69	56.22	1,306.1	15.9	47.8	-3.1	1.12	-1.12	-6.28

SEP 9 1 2016



<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well Hoskins Unit 2H
<b>Project:</b>	Doddridge County WV	<b>TVD Reference:</b>	Precision 525: 1159' GL + 19' KB @ 1178.0usft
<b>Site:</b>	Hamilton Pad: Costlow/Gaskins/Hoskins/Knight	<b>MD Reference:</b>	Precision 525: 1159' GL + 19' KB @ 1178.0usft
<b>Well:</b>	Hoskins Unit 2H	<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)
1,333.0	0.61	62.22	1,331.1	16.1	48.0	-3.1	0.42	-0.32	24.00
1,358.0	0.54	53.87	1,356.1	16.2	48.3	-3.0	0.44	-0.28	-33.40
1,383.0	0.47	59.10	1,381.1	16.3	48.4	-3.0	0.33	-0.28	20.92
1,408.0	0.44	58.85	1,406.1	16.4	48.6	-3.0	0.12	-0.12	-1.00
1,433.0	0.41	63.59	1,431.1	16.5	48.8	-2.9	0.18	-0.12	18.96
1,458.0	0.32	65.35	1,456.1	16.6	48.9	-2.9	0.36	-0.36	7.04
1,483.0	0.26	62.43	1,481.1	16.7	49.0	-2.9	0.25	-0.24	-11.68
1,508.0	0.18	88.95	1,506.1	16.7	49.1	-2.9	0.51	-0.32	106.08
1,533.0	0.20	96.98	1,531.1	16.7	49.2	-3.0	0.13	0.08	32.12
1,558.0	0.21	97.07	1,556.1	16.7	49.3	-3.0	0.04	0.04	0.36
1,583.0	0.18	99.13	1,581.1	16.7	49.4	-3.1	0.12	-0.12	8.24
1,608.0	0.15	110.34	1,606.1	16.6	49.4	-3.1	0.18	-0.12	44.84
1,633.0	0.21	91.62	1,631.1	16.6	49.5	-3.1	0.33	0.24	-74.88
1,658.0	0.18	91.36	1,656.1	16.6	49.6	-3.2	0.12	-0.12	-1.04
1,683.0	0.20	108.10	1,681.1	16.6	49.7	-3.2	0.23	0.08	66.96
1,708.0	0.23	114.39	1,706.1	16.6	49.8	-3.3	0.15	0.12	25.16
1,733.0	0.24	141.63	1,731.1	16.5	49.9	-3.4	0.44	0.04	106.96
1,758.0	0.18	113.76	1,756.1	16.5	49.9	-3.4	0.47	-0.24	-111.48
1,783.0	0.14	131.52	1,781.1	16.4	50.0	-3.5	0.25	-0.16	71.04
1,808.0	0.11	125.09	1,806.1	16.4	50.0	-3.5	0.13	-0.12	-25.72
1,833.0	0.06	69.96	1,831.1	16.4	50.1	-3.6	0.36	-0.20	-220.44
1,858.0	0.17	98.79	1,856.1	16.4	50.1	-3.6	0.46	0.44	115.24
1,883.0	0.26	111.66	1,881.1	16.3	50.2	-3.6	0.41	0.36	51.48
1,908.0	0.19	140.78	1,906.1	16.3	50.3	-3.7	0.53	-0.28	116.48
1,933.0	0.18	137.74	1,931.1	16.2	50.3	-3.8	0.06	-0.04	-12.16
1,958.0	0.16	131.67	1,956.1	16.2	50.4	-3.9	0.11	-0.08	-24.28
1,983.0	0.15	123.46	1,981.1	16.1	50.4	-3.9	0.10	-0.04	-32.84
2,008.0	0.17	108.60	2,006.1	16.1	50.5	-4.0	0.18	0.08	-59.44
2,033.0	0.17	120.54	2,031.1	16.1	50.6	-4.0	0.14	0.00	47.76
2,058.0	0.14	139.32	2,056.1	16.0	50.6	-4.1	0.23	-0.12	75.12
2,083.0	0.22	134.96	2,081.1	16.0	50.7	-4.2	0.32	0.32	-17.44
2,108.0	0.15	130.35	2,106.1	15.9	50.7	-4.2	0.29	-0.28	-18.44
2,133.0	0.26	93.40	2,131.1	15.9	50.8	-4.3	0.67	0.44	-147.80
2,158.0	0.28	121.20	2,156.1	15.9	50.9	-4.4	0.52	0.08	111.20
2,183.0	0.37	141.98	2,181.1	15.8	51.0	-4.5	0.59	0.36	83.12
2,208.0	0.19	103.44	2,206.1	15.7	51.1	-4.6	1.00	-0.72	-154.16
2,233.0	0.33	112.88	2,231.1	15.7	51.2	-4.7	0.58	0.56	37.76
2,258.0	0.22	130.53	2,256.1	15.6	51.3	-4.8	0.55	-0.44	70.60
2,283.0	0.30	106.32	2,281.1	15.6	51.4	-4.8	0.54	0.32	-96.84
2,308.0	0.23	117.55	2,306.1	15.5	51.5	-4.9	0.35	-0.28	44.92
2,333.0	0.19	126.73	2,331.1	15.5	51.6	-5.0	0.21	-0.16	36.72
2,358.0	0.22	127.03	2,356.1	15.4	51.7	-5.1	0.12	0.12	1.20
2,383.0	0.19	122.92	2,381.1	15.4	51.7	-5.1	0.13	-0.12	-16.44
2,408.0	0.14	143.67	2,406.1	15.3	51.8	-5.2	0.31	-0.20	83.00



Scientific Drilling International  
Survey Report



<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well Hoskins Unit 2H
<b>Project:</b>	Doddridge County WV	<b>TVD Reference:</b>	Precision 525: 1159' GL + 19' KB @ 1178.0usft
<b>Site:</b>	Hamilton Pad: Costlow/Gaskins/Hoskins/Knight	<b>MD Reference:</b>	Precision 525: 1159' GL + 19' KB @ 1178.0usft
<b>Well:</b>	Hoskins Unit 2H	<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)	
2,433.0	0.10	79.73	2,431.1	15.3	51.8	-5.2	0.53	-0.16	-255.76	
2,458.0	0.18	113.15	2,456.1	15.3	51.9	-5.3	0.44	0.32	133.68	
2,483.0	0.25	70.57	2,481.1	15.3	52.0	-5.3	0.68	0.28	-170.32	
2,508.0	0.25	110.82	2,506.1	15.3	52.1	-5.3	0.68	0.00	160.20	
2,533.0	0.16	80.48	2,531.1	15.3	52.2	-5.4	0.55	-0.36	-120.56	
2,558.0	0.20	106.20	2,556.1	15.3	52.2	-5.4	0.36	0.16	102.88	
2,583.0	0.20	107.14	2,581.1	15.2	52.3	-5.5	0.01	0.00	3.76	
2,608.0	0.19	106.80	2,606.1	15.2	52.4	-5.5	0.04	-0.04	-1.36	
2,633.0	0.18	106.43	2,631.1	15.2	52.5	-5.6	0.04	-0.04	-1.48	
2,658.0	0.17	108.02	2,656.1	15.2	52.6	-5.6	0.04	-0.04	-1.64	
2,683.0	0.16	105.57	2,681.1	15.1	52.6	-5.7	0.04	-0.04	-1.80	
2,708.0	0.15	105.07	2,706.1	15.1	52.7	-5.7	0.04	-0.04	-2.00	
2,733.0	0.14	104.51	2,731.1	15.1	52.8	-5.8	0.04	-0.04	-2.24	
2,758.0	0.14	103.88	2,756.1	15.1	52.8	-5.8	0.01	0.00	-2.52	
2,783.0	0.13	103.17	2,781.1	15.1	52.9	-5.8	0.04	-0.04	-2.84	
2,808.0	0.12	102.35	2,806.1	15.1	52.9	-5.9	0.04	-0.04	-3.28	
2,833.0	0.11	101.41	2,831.1	15.1	53.0	-5.9	0.04	-0.04	-3.76	
2,858.0	0.10	100.32	2,856.1	15.1	53.0	-5.9	0.04	-0.04	-4.36	
2,883.0	0.09	99.04	2,881.1	15.0	53.1	-5.9	0.04	-0.04	-5.12	
2,908.0	0.09	97.51	2,906.1	15.0	53.1	-5.9	0.01	0.00	-6.12	
2,933.0	0.08	95.66	2,931.1	15.0	53.1	-6.0	0.04	-0.04	-7.40	
2,958.0	0.07	93.37	2,956.1	15.0	53.2	-6.0	0.04	-0.04	-9.16	
2,983.0	0.06	90.50	2,981.1	15.0	53.2	-6.0	0.04	-0.04	-11.48	
3,008.0	0.05	86.78	3,006.1	15.0	53.2	-6.0	0.04	-0.04	-14.88	
3,033.0	0.05	81.86	3,031.1	15.0	53.2	-6.0	0.02	0.00	-19.88	
3,058.0	0.04	75.15	3,056.1	15.0	53.3	-6.0	0.05	-0.04	-26.84	
3,083.0	0.03	65.78	3,081.1	15.0	53.3	-6.0	0.05	-0.04	-37.48	
3,108.0	0.03	52.71	3,106.1	15.0	53.3	-6.0	0.03	0.00	-52.28	
3,133.0	0.03	35.54	3,131.1	15.1	53.3	-6.0	0.04	0.00	-68.68	
3,158.0	0.03	16.19	3,156.1	15.1	53.3	-6.0	0.04	0.00	-77.40	
3,183.0	0.03	358.53	3,181.1	15.1	53.3	-6.0	0.04	0.00	-70.64	
3,208.0	0.03	344.88	3,206.1	15.1	53.3	-6.0	0.03	0.00	-54.60	
3,233.0	0.04	335.05	3,231.1	15.1	53.3	-6.0	0.05	0.04	-39.32	
3,258.0	0.05	328.03	3,256.1	15.1	53.3	-5.9	0.05	0.04	-28.08	
3,283.0	0.05	322.90	3,281.1	15.1	53.3	-5.9	0.02	0.00	-20.52	
3,308.0	0.06	319.05	3,306.1	15.2	53.3	-5.9	0.04	0.04	-15.40	
3,333.0	0.07	316.07	3,331.1	15.2	53.2	-5.9	0.04	0.04	-11.92	
3,358.0	0.08	313.71	3,356.1	15.2	53.2	-5.8	0.04	0.04	-9.44	
3,383.0	0.08	311.81	3,381.1	15.2	53.2	-5.8	0.01	0.00	-7.60	
3,408.0	0.09	310.24	3,406.1	15.3	53.2	-5.8	0.04	0.04	-6.28	
3,433.0	0.10	308.92	3,431.1	15.3	53.1	-5.7	0.04	0.04	-5.28	
3,458.0	0.11	307.81	3,456.1	15.3	53.1	-5.7	0.04	0.04	-4.44	
3,483.0	0.12	306.85	3,481.1	15.3	53.1	-5.7	0.04	0.04	-3.84	



**Company:** Antero Resources  
**Project:** Doddridge County WV  
**Site:** Hamilton Pad. Costlow/Gaskins/Hoskins/Knight  
**Well:** Hoskins Unit 2H  
**Wellbore:** Original Wellpath  
**Design:** As Drilled

**Local Co-ordinate Reference:** Well Hoskins Unit 2H  
**TVD Reference:** Precision 525: 1159' GL + 19' KB @ 1178.0usft  
**MD Reference:** Precision 525: 1159' GL + 19' KB @ 1178.0usft  
**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)
3,508.0	0.13	306.02	3,506.1	15.4	53.0	-5.6	0.04	0.04	-3.32
3,533.0	0.13	305.30	3,531.1	15.4	53.0	-5.6	0.01	0.00	-2.88
3,558.0	0.14	304.66	3,556.1	15.4	52.9	-5.5	0.04	0.04	-2.56
3,583.0	0.15	304.09	3,581.1	15.5	52.9	-5.5	0.04	0.04	-2.28
3,608.0	0.16	303.58	3,606.1	15.5	52.8	-5.4	0.04	0.04	-2.04
3,633.0	0.17	303.12	3,631.1	15.6	52.7	-5.3	0.04	0.04	-1.84
3,658.0	0.18	302.71	3,656.1	15.6	52.7	-5.3	0.04	0.04	-1.64
3,683.0	0.19	302.33	3,681.1	15.6	52.6	-5.2	0.04	0.04	-1.52
3,708.0	0.19	301.99	3,706.1	15.7	52.5	-5.1	0.00	0.00	-1.36
3,733.0	0.20	301.67	3,731.1	15.7	52.5	-5.1	0.04	0.04	-1.28
3,758.0	0.21	301.38	3,756.1	15.8	52.4	-5.0	0.04	0.04	-1.16
3,783.0	0.22	301.12	3,781.1	15.8	52.3	-4.9	0.04	0.04	-1.04
3,808.0	0.23	300.87	3,806.1	15.9	52.2	-4.8	0.04	0.04	-1.00
3,833.0	0.24	300.84	3,831.1	15.9	52.1	-4.8	0.04	0.04	-0.92
3,858.0	0.25	300.43	3,856.1	16.0	52.1	-4.7	0.04	0.04	-0.84
3,883.0	0.25	300.23	3,881.1	16.0	52.0	-4.6	0.00	0.00	-0.80
3,908.0	0.26	300.04	3,906.1	16.1	51.9	-4.5	0.04	0.04	-0.76
3,933.0	0.27	299.87	3,931.1	16.1	51.8	-4.4	0.04	0.04	-0.68
3,958.0	0.28	299.71	3,956.1	16.2	51.7	-4.3	0.04	0.04	-0.64
3,983.0	0.29	299.55	3,981.1	16.3	51.6	-4.2	0.04	0.04	-0.64
4,008.0	0.30	299.41	4,006.1	16.3	51.4	-4.1	0.04	0.04	-0.56
4,033.0	0.30	299.27	4,031.1	16.4	51.3	-4.0	0.00	0.00	-0.56
4,058.0	0.31	299.14	4,056.1	16.5	51.2	-3.9	0.04	0.04	-0.52
4,083.0	0.32	299.02	4,081.1	16.5	51.1	-3.8	0.04	0.04	-0.48
4,108.0	0.33	298.90	4,106.1	16.6	51.0	-3.7	0.04	0.04	-0.48
4,133.0	0.34	298.79	4,131.1	16.7	50.8	-3.6	0.04	0.04	-0.44
4,158.0	0.35	298.69	4,156.1	16.7	50.7	-3.5	0.04	0.04	-0.40
4,183.0	0.36	298.59	4,181.1	16.8	50.6	-3.4	0.04	0.04	-0.40
4,208.0	0.36	298.49	4,206.1	16.9	50.4	-3.2	0.00	0.00	-0.40
4,233.0	0.37	298.40	4,231.1	17.0	50.3	-3.1	0.04	0.04	-0.36
4,258.0	0.27	20.18	4,256.1	17.1	50.2	-3.0	1.70	-0.40	327.12
4,283.0	1.22	82.01	4,281.1	17.2	50.5	-3.0	4.47	3.80	247.32
4,308.0	2.32	83.06	4,306.1	17.3	51.3	-3.2	4.40	4.40	4.20
4,333.0	2.91	81.56	4,331.1	17.4	52.4	-3.5	2.38	2.36	-6.00
4,358.0	3.69	80.68	4,356.0	17.6	53.8	-3.8	3.13	3.12	-3.52
4,383.0	4.72	80.67	4,381.0	17.9	55.7	-4.2	4.12	4.12	-0.04
4,408.0	4.86	80.68	4,405.9	18.3	57.7	-4.7	0.56	0.56	0.04
4,433.0	5.38	80.78	4,430.8	18.6	59.9	-5.2	2.08	2.08	0.40
4,458.0	5.97	81.71	4,455.7	19.0	62.4	-5.7	2.39	2.36	3.72
4,483.0	6.77	81.88	4,480.5	19.4	65.1	-6.4	3.20	3.20	0.68
4,508.0	6.80	81.35	4,505.3	19.8	68.0	-7.1	0.28	0.12	-2.12
4,533.0	7.43	81.21	4,530.1	20.3	71.1	-7.8	2.52	2.52	-0.56
4,558.0	7.72	81.44	4,554.9	20.8	74.3	-8.6	1.17	1.16	0.92



Scientific Drilling International  
Survey Report



<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well Hoskins Unit 2H
<b>Project:</b>	Doddridge County WV	<b>TVD Reference:</b>	Precision 525: 1159' GL + 19' KB @ 1178.0usft
<b>Site:</b>	Hamilton Pad: Costlow/Gaskins/Hoskins/Knight	<b>MD Reference:</b>	Precision 525: 1159' GL + 19' KB @ 1178.0usft
<b>Well:</b>	Hoskins Unit 2H	<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)
4,583.0	7.91	82.22	4,579.7	21.3	77.7	-9.4	0.87	0.76	3.12
4,608.0	8.26	82.52	4,604.4	21.7	81.2	-10.3	1.41	1.40	1.20
4,633.0	8.38	82.22	4,629.2	22.2	84.8	-11.2	0.51	0.48	-1.20
4,658.0	8.89	82.58	4,653.9	22.7	88.5	-12.1	2.05	2.04	1.44
4,683.0	9.68	82.57	4,678.6	23.2	92.5	-13.1	3.16	3.16	-0.04
4,708.0	10.37	82.66	4,703.2	23.8	96.8	-14.2	2.76	2.76	0.36
4,733.0	11.57	81.53	4,727.7	24.5	101.5	-15.4	4.88	4.80	-4.52
4,758.0	12.77	81.17	4,752.2	25.2	106.7	-16.6	4.81	4.80	-1.44
4,783.0	13.83	80.81	4,776.5	26.1	112.4	-17.9	4.25	4.24	-1.44
4,808.0	14.67	80.47	4,800.7	27.2	118.5	-19.2	3.38	3.36	-1.36
4,833.0	15.48	80.54	4,824.9	28.2	124.9	-20.6	3.24	3.24	0.28
4,858.0	16.48	80.72	4,848.9	29.3	131.7	-22.1	4.00	4.00	0.72
4,883.0	17.13	80.87	4,872.8	30.5	138.8	-23.7	2.61	2.60	0.60
4,908.0	17.40	81.41	4,896.7	31.6	146.2	-25.4	1.26	1.08	2.16
4,933.0	17.48	82.53	4,920.6	32.7	153.6	-27.2	1.38	0.32	4.48
4,958.0	17.90	83.15	4,944.4	33.6	161.1	-29.2	1.84	1.68	2.48
4,983.0	18.44	84.20	4,968.1	34.5	168.9	-31.3	2.53	2.16	4.20
5,008.0	19.01	85.23	4,991.8	35.2	176.9	-33.6	2.64	2.28	4.12
5,033.0	19.49	86.35	5,015.4	35.8	185.1	-36.1	2.42	1.92	4.48
5,058.0	19.78	87.18	5,039.0	36.3	193.5	-38.8	1.61	1.16	3.32
5,083.0	20.25	87.69	5,062.4	36.7	202.0	-41.7	2.01	1.88	2.04
5,108.0	20.58	88.19	5,085.9	37.0	210.7	-44.6	1.42	1.24	2.00
5,133.0	20.91	88.30	5,109.3	37.3	219.6	-47.7	1.41	1.40	0.44
5,158.0	21.52	88.25	5,132.6	37.5	228.6	-50.8	2.44	2.44	-0.20
5,183.0	22.46	87.95	5,155.7	37.9	238.0	-54.0	3.79	3.76	-1.20
5,208.0	23.57	87.82	5,178.8	38.2	247.7	-57.4	4.44	4.44	-0.52
5,233.0	24.41	87.36	5,201.6	38.6	257.9	-60.8	3.44	3.36	-1.84
5,258.0	25.44	86.90	5,224.3	39.2	268.4	-64.2	4.19	4.12	-1.84
5,283.0	26.31	86.55	5,246.8	39.8	279.3	-67.7	3.53	3.48	-1.40
5,308.0	26.41	86.08	5,269.2	40.5	290.4	-71.2	0.93	0.40	-1.88
5,333.0	26.53	85.97	5,291.5	41.3	301.5	-74.7	0.52	0.48	-0.44
5,358.0	26.76	84.95	5,314.0	42.2	312.5	-78.0	3.57	-3.08	-4.08
5,383.0	25.46	84.47	5,336.5	43.2	323.2	-81.1	1.46	-1.20	-1.92
5,408.0	24.96	83.84	5,359.1	44.2	333.8	-84.0	2.27	-2.00	-2.52
5,433.0	24.91	83.31	5,381.8	45.4	344.3	-86.9	0.92	-0.20	-2.12
5,458.0	24.70	82.97	5,404.5	46.7	354.7	-89.6	1.02	-0.84	-1.36
5,483.0	24.84	83.33	5,427.2	47.9	365.1	-92.3	0.82	0.56	1.44
5,508.0	24.82	83.74	5,449.9	49.1	375.5	-95.2	0.69	-0.08	1.64
5,533.0	24.94	84.01	5,472.6	50.2	386.0	-98.0	0.66	0.48	1.08
5,558.0	24.77	83.82	5,495.3	51.3	396.5	-100.9	0.75	-0.68	-0.76
5,583.0	24.35	83.21	5,518.0	52.5	406.8	-103.7	1.96	-1.68	-2.44
5,608.0	24.07	83.01	5,540.8	53.7	417.0	-106.4	1.17	-1.12	-0.80
5,633.0	23.85	82.93	5,563.6	55.0	427.0	-109.0	0.89	-0.88	-0.32
5,658.0	24.00	83.31	5,586.5	58.2	437.1	-111.6	0.86	0.60	1.52





<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well Hoskins Unit 2H
<b>Project:</b>	Doddridge County WV	<b>TVD Reference:</b>	Precision 525: 1159' GL + 19' KB @ 1178.0usft
<b>Site:</b>	Hamilton Pad: Costlow/Gaskins/Hoskins/Knight	<b>MD Reference:</b>	Precision 525: 1159' GL + 19' KB @ 1178.0usft
<b>Well:</b>	Hoskins Unit 2H	<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)	
5,683.0	23.55	83.41	5,609.4	57.4	447.1	-114.3	1.81	-1.80	0.40	
5,708.0	23.26	83.35	5,632.3	58.5	457.0	-116.9	1.16	-1.16	-0.24	
5,733.0	23.26	83.83	5,655.3	59.6	466.8	-119.6	0.76	0.00	1.92	
5,758.0	23.39	84.67	5,678.2	60.6	476.6	-122.4	1.43	0.52	3.36	
5,783.0	22.75	85.26	5,701.2	61.5	486.4	-125.2	2.72	-2.56	2.36	
5,808.0	22.57	85.18	5,724.3	62.3	496.0	-128.1	0.73	-0.72	-0.32	
5,833.0	22.83	85.24	5,747.4	63.1	505.6	-130.9	1.04	1.04	0.24	
5,858.0	23.25	85.80	5,770.4	63.8	515.4	-133.9	1.89	1.68	2.24	
5,883.0	23.77	86.98	5,793.3	64.5	525.3	-137.0	2.81	2.08	4.72	
5,908.0	24.60	88.23	5,816.1	64.9	535.5	-140.5	3.90	3.32	5.00	
5,933.0	25.05	88.79	5,838.8	65.2	546.0	-144.1	2.03	1.80	2.24	
5,958.0	24.94	88.92	5,861.5	65.4	556.6	-147.9	0.49	-0.44	0.52	
5,983.0	24.61	88.93	5,884.2	65.6	567.1	-151.6	1.32	-1.32	0.04	
6,008.0	24.30	88.79	5,906.9	65.8	577.4	-155.3	1.26	-1.24	-0.56	
6,033.0	23.95	88.20	5,929.7	66.0	587.6	-158.9	1.70	-1.40	-2.36	
6,058.0	24.16	87.62	5,952.6	66.4	597.8	-162.4	1.26	0.84	-2.32	
6,083.0	24.43	86.39	5,975.3	66.9	608.1	-165.7	2.29	1.08	-4.92	
6,108.0	24.52	84.96	5,998.1	67.7	618.4	-168.9	2.40	0.36	-5.72	
6,133.0	24.54	83.93	6,020.8	68.7	628.7	-171.8	1.71	0.08	-4.12	
6,158.0	23.99	83.47	6,043.6	69.9	639.0	-174.6	2.33	-2.20	-1.84	
6,183.0	23.45	82.60	6,066.5	71.1	648.9	-177.2	2.57	-2.16	-3.48	
6,208.0	22.92	82.08	6,089.5	72.4	658.7	-179.6	2.27	-2.12	-2.08	
6,233.0	22.44	81.50	6,112.6	73.8	668.2	-181.9	2.12	-1.92	-2.32	
6,258.0	22.40	80.79	6,135.7	75.2	677.7	-184.1	1.09	-0.16	-2.84	
6,283.0	22.08	80.26	6,158.8	76.8	687.0	-186.1	1.51	-1.28	-2.12	
6,308.0	22.37	81.05	6,182.0	78.3	696.3	-188.2	1.67	1.16	3.16	
6,333.0	22.80	82.57	6,205.1	79.7	705.8	-190.5	2.90	1.72	6.08	
6,358.0	23.87	83.23	6,228.0	80.9	715.6	-193.1	4.41	4.28	2.64	
6,383.0	24.13	83.22	6,250.8	82.1	725.7	-195.7	1.04	1.04	-0.04	
6,408.0	23.78	82.10	6,273.7	83.4	735.8	-198.3	2.30	-1.40	-4.48	
6,428.0	23.34	81.50	6,292.0	84.6	743.7	-200.2	2.51	-2.21	-2.98	
<b>Last Gyro @ 6428</b>										
6,428.8	23.32	81.48	6,292.8	84.6	744.0	-200.3	2.51	-2.21	-3.03	
6,492.0	23.40	81.17	6,350.8	88.4	768.8	-206.1	0.23	0.13	-0.49	
<b>First SDI MWD @ 6492</b>										
6,528.0	22.97	80.55	6,383.9	90.6	782.8	-209.2	1.37	-1.19	-1.72	
6,573.0	22.89	78.37	6,425.3	93.8	800.0	-212.7	1.90	-0.18	-4.84	
6,617.0	23.86	78.88	6,465.7	97.6	817.1	-215.6	2.58	2.20	-3.39	
6,662.0	22.77	69.33	6,507.0	102.7	834.1	-217.2	7.06	-2.42	-16.78	
6,707.0	21.79	54.29	6,548.7	110.7	849.0	-215.4	12.82	-2.18	-33.42	
6,720.0	21.86	49.84	6,560.8	113.6	852.9	-214.1	12.74	0.54	-34.24	
<b>SCMR @ 6720</b>										
6,752.0	22.53	39.18	6,590.4	122.2	861.3	-209.3	12.74	2.09	-33.31	
6,797.0	24.88	29.32	6,631.6	137.2	871.4	-199.2	10.22	5.22	-21.91	



Scientific Drilling International  
Survey Report



<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well Hoskins Unit 2H
<b>Project:</b>	Doddridge County WV	<b>TVD Reference:</b>	Precision 525: 1159' GL + 19' KB @ 1178.0usft
<b>Site:</b>	Hamilton Pad: Costlow/Gaskins/Hoskins/Knight	<b>MD Reference:</b>	Precision 525: 1159' GL + 19' KB @ 1178.0usft
<b>Well:</b>	Hoskins Unit 2H	<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)
6,841.0	26.99	22.24	6,871.2	154.5	879.7	-186.3	8.51	4.80	-16.09
6,886.0	30.14	15.83	6,710.7	174.8	886.6	-170.0	9.76	7.00	-14.24
6,927.0	34.72	10.37	6,745.3	196.2	891.5	-152.0	13.25	11.17	-13.31
<b>MDLX @ 6927</b>									
6,931.0	35.18	9.91	6,748.6	198.5	892.0	-150.1	13.25	11.46	-11.60
6,976.0	40.63	5.79	6,784.1	225.9	895.7	-126.1	13.35	12.11	-9.16
7,021.0	45.18	2.26	6,817.1	256.4	897.8	-98.6	11.43	10.11	-7.84
7,066.0	47.56	359.68	6,848.1	289.0	898.3	-68.6	6.72	5.29	-5.73
7,111.0	53.21	355.40	6,876.8	323.6	896.8	-35.9	14.53	12.56	-9.51
7,115.0	53.54	355.16	6,879.2	326.8	896.5	-32.9	9.80	8.26	-6.09
<b>BRKT @ 7115</b>									
7,155.0	56.87	352.83	6,902.0	359.4	893.1	-1.3	9.60	8.32	-5.82
7,166.0	57.72	352.00	6,908.0	368.6	891.8	7.7	9.95	7.68	-7.52
<b>TLLY @ 7166</b>									
7,200.0	60.36	349.54	6,925.5	397.4	887.1	36.1	9.95	7.78	-7.24
7,245.0	64.64	346.86	6,946.2	436.4	879.0	75.4	10.88	9.51	-5.96
7,286.0	68.82	344.45	6,963.2	474.7	869.2	114.5	11.01	9.73	-5.61
<b>MRCL_HOT @ 7286</b>									
7,290.0	69.02	344.34	6,963.9	476.5	868.7	116.4	11.01	9.77	-5.43
7,334.0	73.06	342.24	6,978.2	516.3	856.7	157.8	10.23	9.18	-4.77
7,379.0	76.95	341.01	6,989.9	557.6	843.0	201.2	9.04	8.64	-2.73
7,424.0	81.87	339.64	6,998.2	599.2	828.1	245.4	11.34	10.93	-3.04
7,451.0	85.75	339.25	7,001.1	624.3	818.7	272.2	14.44	14.37	-1.44
7,496.0	90.39	337.62	7,002.6	666.1	802.2	317.1	10.93	10.31	-3.62
7,541.0	91.02	337.35	7,002.0	707.7	784.9	362.1	1.52	1.40	-0.60
7,631.0	91.53	339.80	7,000.0	791.5	752.1	452.1	2.78	0.57	2.72
7,720.0	90.83	340.31	6,998.2	875.1	721.7	541.0	0.97	-0.79	0.57
7,810.0	90.22	339.58	6,997.4	959.6	690.8	631.0	1.06	-0.68	-0.81
7,899.0	90.05	338.96	6,997.2	1,042.9	659.3	720.0	0.72	-0.19	-0.70
7,989.0	91.00	338.82	6,996.3	1,126.8	626.9	809.9	1.07	1.06	-0.16
8,079.0	89.49	338.15	6,995.9	1,210.6	593.9	899.9	1.84	-1.68	-0.74
8,168.0	89.69	338.16	6,996.6	1,293.2	560.8	986.9	0.22	0.22	0.01
8,258.0	90.36	339.18	6,996.5	1,377.0	528.1	1,078.9	1.36	0.74	1.13
8,348.0	90.66	342.33	6,995.7	1,462.0	498.4	1,168.8	3.52	0.33	3.50
8,437.0	89.73	338.98	6,995.4	1,545.9	468.9	1,257.7	3.91	-1.04	-3.76
8,527.0	89.99	338.15	6,995.7	1,629.7	436.0	1,347.7	0.97	0.29	-0.92
8,617.0	90.43	338.40	6,995.3	1,713.3	402.7	1,437.7	0.56	0.49	0.28
8,706.0	90.50	337.41	6,994.6	1,795.8	369.3	1,526.7	1.12	0.08	-1.11
8,796.0	90.47	334.29	6,993.8	1,877.9	332.4	1,616.6	3.47	-0.03	-3.47
8,885.0	90.74	334.80	6,992.9	1,958.2	294.2	1,705.4	0.65	0.30	0.57
8,975.0	91.14	336.31	6,991.4	2,040.1	257.0	1,795.3	1.74	0.44	1.68
9,065.0	91.34	338.14	6,989.5	2,123.1	222.1	1,885.3	2.04	0.22	2.03
9,154.0	89.93	336.48	6,988.5	2,205.2	187.8	1,974.3	2.45	-1.58	-1.87
9,244.0	89.96	338.03	6,988.6	2,288.2	153.0	2,064.3	1.72	0.03	1.72

SEP 2016  
3.47  
0.03  
0.57  
1.68  
2.03  
-1.87  
1.72



Scientific Drilling International  
Survey Report



<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well Hoskins Unit 2H
<b>Project:</b>	Doddridge County WV	<b>TVD Reference:</b>	Precision 525: 1159' GL + 19' KB @ 1178.0usft
<b>Site:</b>	Hamilton Pad: Costlow/Gaskins/Hoskins/Knight	<b>MD Reference:</b>	Precision 525: 1159' GL + 19' KB @ 1178.0usft
<b>Well:</b>	Hoskins Unit 2H	<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)
9,334.0	90.66	342.27	6,988.1	2,372.8	122.5	2,154.2	4.77	0.78	4.71
9,423.0	88.91	341.27	6,988.4	2,457.4	94.6	2,243.0	2.26	-1.97	-1.12
9,513.0	89.01	338.95	6,990.1	2,542.0	64.0	2,332.9	2.58	0.11	-2.58
9,602.0	89.44	339.85	6,991.3	2,625.3	32.7	2,421.9	1.12	0.48	1.01
9,692.0	90.08	339.35	6,991.6	2,709.6	1.3	2,511.8	0.90	0.71	-0.56
9,782.0	90.04	337.21	6,991.5	2,793.2	-32.0	2,601.8	2.38	-0.04	-2.38
9,871.0	89.57	333.45	6,991.9	2,874.1	-69.1	2,690.7	4.26	-0.53	-4.22
9,961.0	90.87	337.38	6,991.5	2,955.9	-106.6	2,780.6	4.60	1.44	4.37
10,051.0	90.30	337.90	6,990.6	3,039.2	-140.8	2,870.6	0.86	-0.63	0.58
10,140.0	90.81	337.60	6,989.7	3,121.5	-174.5	2,959.6	0.66	0.57	-0.34
10,230.0	89.73	337.36	6,989.3	3,204.7	-209.0	3,049.6	1.23	-1.20	-0.27
10,320.0	89.77	337.12	6,989.7	3,287.6	-243.8	3,139.6	0.27	0.04	-0.27
10,409.0	89.93	337.48	6,989.9	3,369.8	-278.1	3,228.6	0.44	0.18	0.40
10,499.0	90.20	337.76	6,989.8	3,453.0	-312.4	3,318.6	0.43	0.30	0.31
10,589.0	89.73	337.47	6,989.9	3,536.2	-346.7	3,408.6	0.81	-0.52	-0.32
10,678.0	90.60	339.91	6,989.6	3,619.1	-379.0	3,497.6	2.91	0.98	2.74
10,768.0	89.63	340.49	6,989.4	3,703.8	-409.5	3,587.5	1.26	-1.08	0.64
10,858.0	90.68	342.98	6,989.2	3,789.2	-437.7	3,677.3	3.00	1.17	2.77
10,947.0	90.37	342.05	6,988.4	3,874.1	-464.4	3,768.0	1.10	-0.35	-1.04
11,037.0	89.87	338.68	6,988.2	3,958.9	-494.7	3,855.9	3.79	-0.56	-3.74
11,126.0	90.47	335.57	6,987.9	4,040.9	-529.3	3,944.9	3.56	0.67	-3.49
11,216.0	90.84	335.40	6,986.9	4,122.7	-566.6	4,034.8	0.45	0.41	-0.19
11,306.0	90.24	335.93	6,986.1	4,204.7	-603.7	4,124.7	0.89	-0.67	0.59
11,395.0	89.50	336.11	6,986.3	4,286.1	-639.9	4,213.7	0.86	-0.83	0.20
11,485.0	90.31	337.98	6,986.4	4,368.9	-675.0	4,303.6	2.26	0.90	2.08
11,575.0	90.14	339.95	6,986.0	4,452.9	-707.3	4,393.6	2.20	-0.19	2.19
11,664.0	89.60	340.86	6,986.3	4,536.8	-737.1	4,482.5	1.19	-0.61	1.02
11,754.0	89.27	339.25	6,987.1	4,621.4	-767.8	4,572.5	1.83	-0.37	-1.79
11,843.0	90.64	338.91	6,987.2	4,704.5	-799.6	4,661.5	1.59	1.54	-0.38
11,933.0	89.37	338.04	6,987.2	4,788.2	-832.6	4,751.5	1.71	-1.41	-0.97
12,022.0	89.44	336.61	6,988.1	4,870.3	-866.9	4,840.4	1.61	0.08	-1.61
12,112.0	90.38	336.62	6,988.3	4,952.9	-902.6	4,930.4	1.04	1.04	0.01
12,202.0	91.04	336.44	6,987.2	5,035.5	-938.5	5,020.4	0.76	0.73	-0.20
12,292.0	89.57	335.68	6,986.7	5,117.7	-975.0	5,110.3	1.84	-1.63	-0.84
12,381.0	89.84	335.80	6,987.1	5,198.9	-1,011.6	5,199.3	0.33	0.30	0.13
12,471.0	89.74	337.94	6,987.5	5,281.6	-1,048.9	5,289.2	2.38	-0.10	2.38
12,561.0	89.57	336.00	6,988.0	5,364.5	-1,082.1	5,379.2	2.16	-0.19	2.16
12,650.0	90.94	336.46	6,987.6	5,445.9	-1,118.0	5,468.2	1.62	1.54	0.52
12,740.0	91.44	337.48	6,985.7	5,528.7	-1,153.2	5,558.1	1.26	0.56	1.13
12,829.0	91.41	340.24	6,983.5	5,611.7	-1,185.3	5,647.1	3.10	-0.03	3.10
12,919.0	91.37	339.77	6,981.3	5,696.2	-1,216.1	5,737.0	0.52	-0.04	-0.52
13,009.0	88.65	335.44	6,981.3	5,779.4	-1,250.3	5,827.0	5.68	-3.02	-4.81
13,098.0	89.83	337.99	6,982.5	5,861.2	-1,285.5	5,915.9	3.16	1.33	2.87

Original Survey Data  
SEP 21 2016  
V3.16  
Environmental



Scientific Drilling International  
Survey Report



Company: Antero Resources  
Project: Doddridge County WV  
Site: Hamilton Pad: Costlow/Gaskins/Hoskins/Knight  
Well: Hoskins Unit 2H  
Wellbore: Original Wellpath  
Design: As Drilled

Local Co-ordinate Reference: Well Hoskins Unit 2H  
TVD Reference: Precision 525: 1159' GL + 19' KB @ 1178.0usft  
MD Reference: Precision 525: 1159' GL + 19' KB @ 1178.0usft  
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)	
13,188.0	90.30	339.33	6,982.4	5,945.0	-1,318.3	6,005.9	1.58	0.52	1.49	
13,278.0	89.53	338.13	6,982.5	6,028.9	-1,350.9	6,095.9	1.58	-0.86	-1.33	
13,367.0	90.16	340.55	6,982.8	6,112.1	-1,382.3	6,184.9	2.81	0.71	2.72	
13,457.0	88.86	340.10	6,983.5	6,196.9	-1,412.6	6,274.8	1.53	-1.44	-0.50	
13,546.0	89.83	340.02	6,984.6	6,280.5	-1,443.0	6,363.7	1.09	1.09	-0.09	
13,636.0	89.66	338.07	6,985.0	6,364.6	-1,475.1	6,453.7	2.17	-0.19	-2.17	
13,725.0	90.30	340.87	6,985.0	6,447.9	-1,506.3	6,542.7	3.23	0.72	3.15	
13,815.0	89.70	339.78	6,985.0	6,532.6	-1,536.6	6,632.6	1.38	-0.87	-1.21	
13,905.0	90.70	337.70	6,984.7	6,616.5	-1,569.3	6,722.6	2.56	1.11	-2.31	
13,995.0	89.26	334.70	6,984.7	6,698.9	-1,605.6	6,812.5	3.70	-1.60	-3.33	
14,084.0	90.70	333.95	6,984.7	6,779.1	-1,644.2	6,901.3	1.82	1.62	-0.84	
14,174.0	90.16	333.35	6,984.1	6,859.7	-1,684.1	6,991.1	0.90	-0.60	-0.67	
14,263.0	91.14	334.23	6,983.1	6,939.5	-1,723.4	7,079.8	1.48	1.10	0.99	
14,353.0	90.27	337.94	6,982.0	7,021.8	-1,759.9	7,169.8	4.23	-0.97	4.12	
14,443.0	89.29	338.89	6,982.3	7,105.5	-1,793.0	7,259.8	1.52	-1.09	1.06	
14,532.0	90.67	339.23	6,982.3	7,188.6	-1,824.8	7,348.7	1.60	1.55	0.38	
14,622.0	90.03	339.26	6,981.8	7,272.8	-1,856.7	7,438.7	0.71	-0.71	0.03	
14,712.0	90.33	336.91	6,981.5	7,356.3	-1,890.3	7,528.7	2.63	0.33	-2.61	
14,801.0	90.54	336.40	6,980.8	7,438.0	-1,925.5	7,617.7	0.62	0.24	-0.57	
14,891.0	90.40	338.85	6,980.1	7,521.2	-1,959.8	7,707.7	2.73	-0.16	2.72	
14,980.0	89.19	337.14	6,980.4	7,603.7	-1,993.1	7,796.7	2.35	-1.36	-1.92	
15,070.0	91.34	341.68	6,980.0	7,687.9	-2,024.8	7,886.6	5.58	2.39	5.04	
15,160.0	90.06	339.85	6,978.9	7,772.9	-2,054.4	7,976.5	2.48	-1.42	-2.03	
15,249.0	90.70	340.30	6,978.3	7,856.5	-2,084.8	8,065.4	0.88	0.72	0.51	
15,339.0	89.53	338.87	6,978.1	7,940.9	-2,116.1	8,155.4	2.05	-1.30	-1.59	
15,429.0	91.21	340.54	6,977.5	8,025.3	-2,147.4	8,245.3	2.63	1.87	1.86	
15,519.0	90.00	337.80	6,976.6	8,109.4	-2,179.4	8,335.3	3.33	-1.34	-3.04	
15,598.0	90.67	336.23	6,976.1	8,182.1	-2,210.2	8,414.3	2.16	0.85	-1.99	
Last SDI MWD @ 15598										
15,663.0	90.67	336.23	6,975.4	8,241.6	-2,236.4	8,479.3	0.00	0.00	0.00	
Projection To Bit @ 15663 MD / 8975 TVD										

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,720.0	6,560.8	SCMR @ 6720		0.00	
6,927.0	6,745.3	MDLX @ 6927		0.00	
7,115.0	6,879.2	BRKT @ 7115		0.00	
7,166.0	6,908.0	TLTY @ 7166		0.00	
7,288.0	6,963.2	MRCL_HOT @ 7288		0.00	

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Original Survey Data  
SEP 21 2016



<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well Hoskins Unit 2H
<b>Project:</b>	Doddridge County WV	<b>TVD Reference:</b>	Precision 525: 1159' GL + 19' KB @ 1178.0usft
<b>Site:</b>	Hamilton Pad: Costlow/Gaskins/Hoskins/Knight	<b>MD Reference:</b>	Precision 525: 1159' GL + 19' KB @ 1178.0usft
<b>Well:</b>	Hoskins Unit 2H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellipath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	Antero NE

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
108.0	108.0	0.0	-0.1	First Gyro @ 108
6,428.0	6,292.0	84.6	743.7	Last Gyro @ 6428
6,492.0	6,350.8	88.4	768.8	First SDI MWD @ 6492
15,598.0	6,976.1	8,182.1	-2,210.2	Last SDI MWD @ 15598
15,663.0	6,975.4	8,241.6	-2,236.4	Projection To Bit @ 15663 MD / 6975 TVD

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

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