



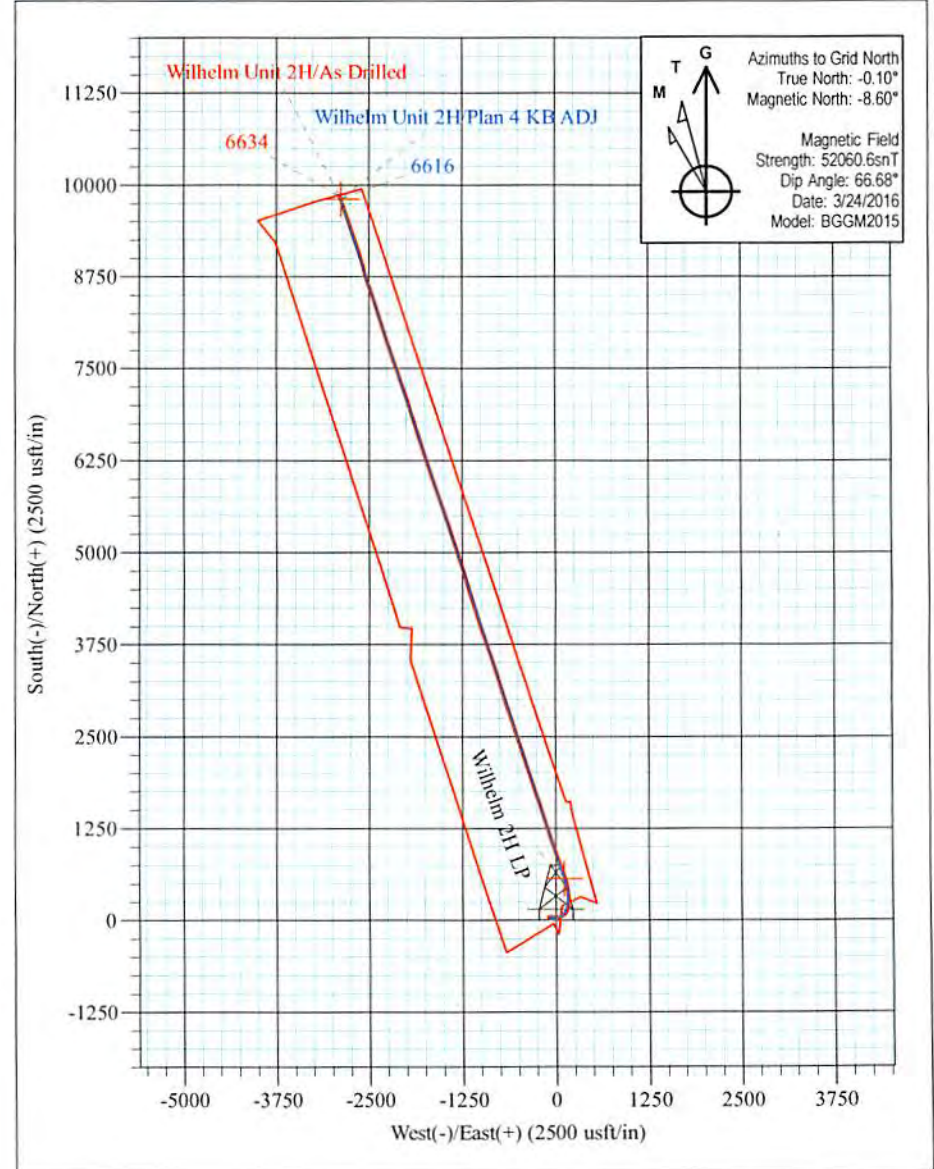
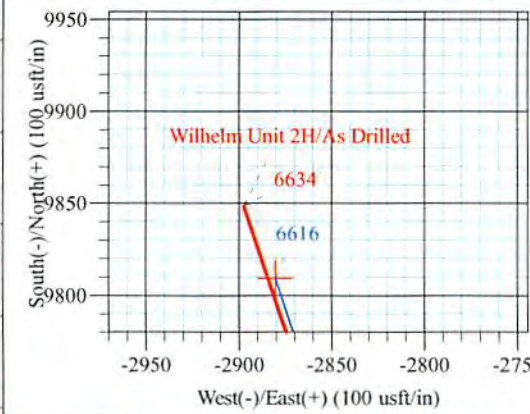
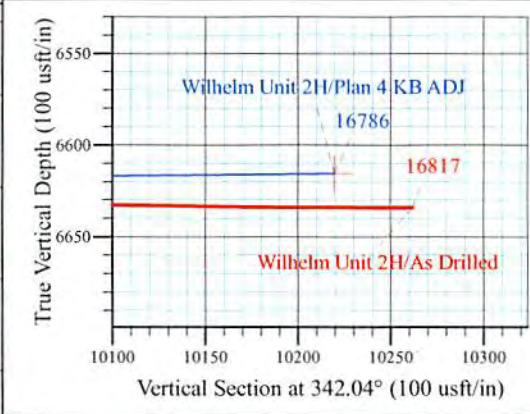
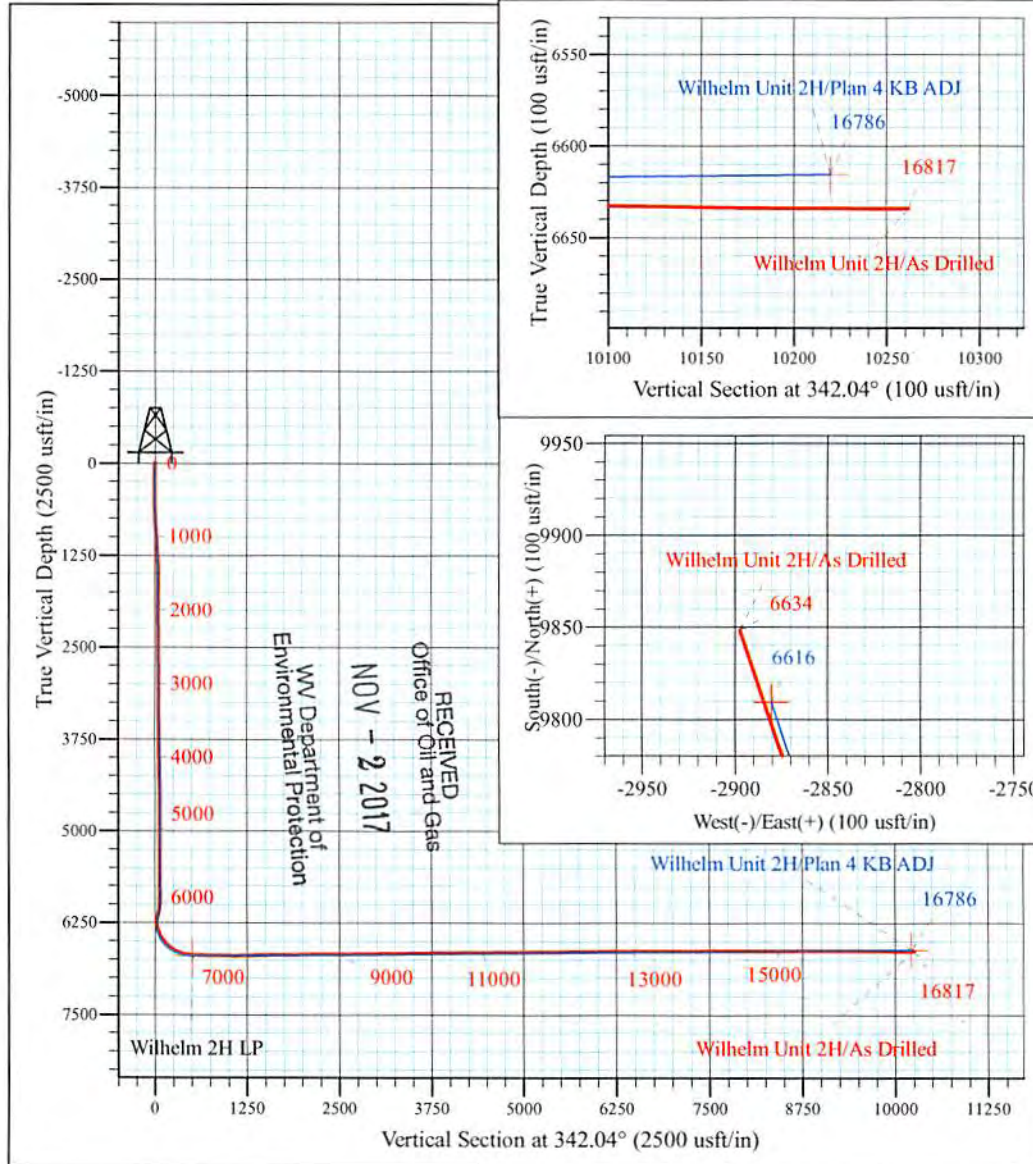
McGill Pad: Hormels/Mash/Nero/Vonda/Wilhelm  
 Wilhelm Unit 2H  
 Plan 4 KB ADJ  
 PD 525: 1164 GL' + 19' KB @ 1183.0usft  
 Doddridge County WV

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



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

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	14261999.22	1683178.40	39° 16' 29.007 N	80° 50' 56.032 W



**Wilhelm Unit 2H**  
**Approx. BHL**  
 39° 18' 6.430 N 80° 51' 32.692 W

Shane Rhodes  
 13:04, April 05 2016  
 Scientific Drilling International  
 124 Vista Drive  
 Charleroi, PA 15022



<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well Wilhelm Unit 2H
<b>Project:</b>	Doddridge County WV	<b>TVD Reference:</b>	PD 525: 1164 GL' + 19' KB @ 1183.0usft
<b>Site:</b>	McGill Pad: Hormels/Mash/Nero/Vonda/Wilhelm	<b>MD Reference:</b>	PD 525: 1164 GL' + 19' KB @ 1183.0usft
<b>Well:</b>	Wilhelm 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>	McGill Pad: Hormels/Mash/Nero/Vonda/Wilhelm		
<b>Site Position:</b>	<b>Northing:</b>	14,261,930.17 usft	<b>Latitude:</b> 39° 16' 28.324 N
<b>From:</b> Map	<b>Easting:</b>	1,683,174.55 usft	<b>Longitude:</b> 80° 50' 56.082 W
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b> 13-3/16 "	<b>Grid Convergence:</b> 0.10 °

<b>Well</b>	Wilhelm Unit 2H, Marcellus		
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b> 14,261,999.22 usft
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b> 1,683,178.39 usft
<b>Position Uncertainty</b>	2.0 usft	<b>Wellhead Elevation:</b>	1,183.0 usft
		<b>Ground Level:</b>	1,164.0 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	11/6/2014	-8.43	66.83	52,209
	BGGM2015	3/24/2016	-8.50	66.68	52,061

<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	342.04

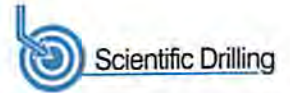
<b>Survey Program</b>	<b>Date</b>	4/5/2016		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
32.0	5,852.2	Survey #5 Def Gyro to KOP (Original Well)	Standard Keeper 104	Standard Wireline Keeper ver 1.0
5,903.0	16,817.0	Survey #6 - SDI MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1

RECEIVED  
Office of Oil and Gas  
NOV - 2 2017  
WV Department of Environmental Protection

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	14,261,999.22	1,683,178.39	39° 16' 29.007 N	80° 50' 56.032 W
32.0	0.41	85.06	32.0	0.0	0.1	14,261,999.23	1,683,178.51	39° 16' 29.007 N	80° 50' 56.030 W
57.0	0.81	85.06	57.0	0.0	0.4	14,261,999.25	1,683,178.77	39° 16' 29.007 N	80° 50' 56.027 W
82.0	1.22	85.06	82.0	0.1	0.8	14,261,999.29	1,683,179.21	39° 16' 29.007 N	80° 50' 56.021 W
107.0	1.63	85.06	107.0	0.1	1.4	14,261,999.34	1,683,179.83	39° 16' 29.008 N	80° 50' 56.014 W
132.0	1.65	86.88	132.0	0.2	2.2	14,261,999.39	1,683,180.55	39° 16' 29.008 N	80° 50' 56.004 W
157.0	1.48	81.33	157.0	0.2	2.8	14,261,999.46	1,683,181.23	39° 16' 29.009 N	80° 50' 55.996 W
182.0	1.32	80.47	182.0	0.3	3.4	14,261,999.56	1,683,181.83	39° 16' 29.010 N	80° 50' 55.988 W
207.0	1.12	80.10	207.0	0.4	4.0	14,261,999.65	1,683,182.35	39° 16' 29.011 N	80° 50' 55.981 W
232.0	0.90	85.68	231.9	0.5	4.4	14,261,999.70	1,683,182.79	39° 16' 29.011 N	80° 50' 55.976 W



Scientific Drilling International  
Survey Report - Geographic



<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well Wilhelm Unit 2H
<b>Project:</b>	Doddridge County WW	<b>TVD Reference:</b>	PD 525: 1164 GL' + 19' KB @ 1183.0usft
<b>Site:</b>	McGill Pad: Hormels/Mash/Nero/Vonda/Wilhelm	<b>MD Reference:</b>	PD 525: 1164 GL' + 19' KB @ 1183.0usft
<b>Well:</b>	Wilhelm 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

RECEIVED  
Office of Oil and Gas  
NOV - 2 2017

Survey

WV Department of Environmental Protection

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
257.0	0.63	92.73	256.9	0.5	4.7	14,261,999.71	1,683,183.12	39° 16' 29.012 N	80° 50' 55.972 W
282.0	0.36	99.45	281.9	0.5	4.9	14,261,999.69	1,683,183.34	39° 16' 29.011 N	80° 50' 55.969 W
307.0	0.08	120.01	306.9	0.5	5.0	14,261,999.67	1,683,183.43	39° 16' 29.011 N	80° 50' 55.968 W
332.0	0.14	153.83	331.9	0.4	5.1	14,261,999.63	1,683,183.46	39° 16' 29.011 N	80° 50' 55.967 W
357.0	0.17	174.74	356.9	0.4	5.1	14,261,999.57	1,683,183.48	39° 16' 29.010 N	80° 50' 55.967 W
382.0	0.19	154.92	381.9	0.3	5.1	14,261,999.50	1,683,183.50	39° 16' 29.009 N	80° 50' 55.967 W
407.0	0.22	171.64	406.9	0.2	5.1	14,261,999.41	1,683,183.52	39° 16' 29.009 N	80° 50' 55.967 W
432.0	0.13	161.33	431.9	0.1	5.1	14,261,999.34	1,683,183.54	39° 16' 29.008 N	80° 50' 55.966 W
457.0	0.17	207.05	456.9	0.1	5.1	14,261,999.28	1,683,183.53	39° 16' 29.007 N	80° 50' 55.967 W
482.0	0.48	263.54	481.9	0.0	5.0	14,261,999.23	1,683,183.41	39° 16' 29.007 N	80° 50' 55.968 W
507.0	1.07	265.95	506.9	0.0	4.7	14,261,999.20	1,683,183.07	39° 16' 29.006 N	80° 50' 55.972 W
532.0	1.44	271.25	531.9	0.0	4.1	14,261,999.19	1,683,182.52	39° 16' 29.006 N	80° 50' 55.979 W
557.0	1.71	275.28	556.9	0.0	3.4	14,261,999.23	1,683,181.84	39° 16' 29.007 N	80° 50' 55.988 W
582.0	2.24	280.04	581.9	0.1	2.6	14,261,999.35	1,683,180.99	39° 16' 29.008 N	80° 50' 55.999 W
607.0	2.59	283.55	606.9	0.4	1.6	14,261,999.57	1,683,179.96	39° 16' 29.010 N	80° 50' 56.012 W
632.0	3.05	285.17	631.9	0.7	0.4	14,261,999.88	1,683,178.77	39° 16' 29.013 N	80° 50' 56.027 W
657.0	3.60	287.11	656.8	1.1	-1.0	14,262,000.28	1,683,177.37	39° 16' 29.017 N	80° 50' 56.045 W
682.0	4.24	288.93	681.8	1.6	-2.6	14,262,000.81	1,683,175.75	39° 16' 29.023 N	80° 50' 56.065 W
707.0	4.81	291.72	706.7	2.3	-4.5	14,262,001.50	1,683,173.90	39° 16' 29.029 N	80° 50' 56.089 W
732.0	5.25	292.40	731.6	3.1	-6.5	14,262,002.33	1,683,171.87	39° 16' 29.038 N	80° 50' 56.115 W
757.0	5.64	292.96	756.5	4.0	-8.7	14,262,003.24	1,683,169.68	39° 16' 29.047 N	80° 50' 56.143 W
782.0	5.99	293.18	781.3	5.0	-11.0	14,262,004.23	1,683,167.35	39° 16' 29.056 N	80° 50' 56.172 W
807.0	6.06	292.47	806.2	6.0	-13.5	14,262,005.25	1,683,164.93	39° 16' 29.067 N	80° 50' 56.203 W
832.0	6.10	292.51	831.1	7.0	-15.9	14,262,006.26	1,683,162.49	39° 16' 29.077 N	80° 50' 56.234 W
857.0	6.15	292.09	855.9	8.1	-18.4	14,262,007.28	1,683,160.02	39° 16' 29.087 N	80° 50' 56.265 W
882.0	6.29	291.92	880.8	9.1	-20.9	14,262,008.29	1,683,157.51	39° 16' 29.097 N	80° 50' 56.297 W
907.0	6.21	290.62	905.6	10.1	-23.4	14,262,009.28	1,683,154.97	39° 16' 29.107 N	80° 50' 56.330 W
932.0	6.16	288.05	930.5	11.0	-26.0	14,262,010.17	1,683,152.43	39° 16' 29.115 N	80° 50' 56.362 W
957.0	6.20	287.70	955.3	11.8	-28.5	14,262,011.00	1,683,149.87	39° 16' 29.124 N	80° 50' 56.394 W
982.0	6.23	287.50	980.2	12.6	-31.1	14,262,011.81	1,683,147.29	39° 16' 29.132 N	80° 50' 56.427 W
1,007.0	6.25	286.23	1,005.0	13.4	-33.7	14,262,012.60	1,683,144.69	39° 16' 29.140 N	80° 50' 56.460 W
1,032.0	6.30	286.03	1,029.9	14.1	-36.3	14,262,013.36	1,683,142.06	39° 16' 29.147 N	80° 50' 56.494 W
1,057.0	6.24	285.32	1,054.7	14.9	-39.0	14,262,014.10	1,683,139.43	39° 16' 29.155 N	80° 50' 56.527 W
1,082.0	6.29	284.95	1,079.6	15.6	-41.6	14,262,014.81	1,683,136.80	39° 16' 29.162 N	80° 50' 56.561 W
1,107.0	6.30	285.11	1,104.4	16.3	-44.2	14,262,015.52	1,683,134.15	39° 16' 29.169 N	80° 50' 56.594 W
1,132.0	6.34	284.69	1,129.3	17.0	-46.9	14,262,016.23	1,683,131.49	39° 16' 29.176 N	80° 50' 56.628 W
1,157.0	6.34	283.98	1,154.1	17.7	-49.6	14,262,016.91	1,683,128.82	39° 16' 29.183 N	80° 50' 56.662 W
1,182.0	5.88	284.32	1,179.0	18.3	-52.2	14,262,017.56	1,683,126.24	39° 16' 29.189 N	80° 50' 56.695 W
1,207.0	4.98	281.51	1,203.9	18.9	-54.5	14,262,018.10	1,683,123.94	39° 16' 29.194 N	80° 50' 56.724 W
1,232.0	4.72	280.49	1,228.8	19.3	-56.5	14,262,018.50	1,683,121.86	39° 16' 29.198 N	80° 50' 56.751 W
1,257.0	4.61	280.70	1,253.7	19.7	-58.5	14,262,018.87	1,683,119.86	39° 16' 29.202 N	80° 50' 56.776 W
1,282.0	4.38	281.46	1,278.6	20.0	-60.5	14,262,019.25	1,683,117.94	39° 16' 29.206 N	80° 50' 56.800 W
1,307.0	4.06	281.52	1,303.6	20.4	-62.3	14,262,019.62	1,683,116.14	39° 16' 29.209 N	80° 50' 56.823 W
1,332.0	3.69	281.31	1,328.5	20.7	-63.9	14,262,019.95	1,683,114.48	39° 16' 29.213 N	80° 50' 56.844 W
1,357.0	3.38	281.08	1,353.5	21.0	-65.4	14,262,020.25	1,683,112.97	39° 16' 29.216 N	80° 50' 56.864 W
1,382.0	3.04	280.95	1,378.4	21.3	-66.8	14,262,020.52	1,683,111.59	39° 16' 29.218 N	80° 50' 56.881 W
1,407.0	2.80	281.53	1,403.4	21.5	-68.0	14,262,020.77	1,683,110.34	39° 16' 29.221 N	80° 50' 56.897 W
1,432.0	2.61	282.00	1,428.4	21.8	-69.2	14,262,021.01	1,683,109.19	39° 16' 29.223 N	80° 50' 56.912 W
1,457.0	2.36	282.24	1,453.3	22.0	-70.3	14,262,021.23	1,683,108.13	39° 16' 29.226 N	80° 50' 56.925 W
1,482.0	2.13	282.10	1,478.3	22.2	-71.2	14,262,021.44	1,683,107.17	39° 16' 29.228 N	80° 50' 56.937 W
1,507.0	1.82	281.06	1,503.3	22.4	-72.1	14,262,021.61	1,683,106.33	39° 16' 29.229 N	80° 50' 56.948 W
1,532.0	1.63	281.33	1,528.3	22.5	-72.8	14,262,021.76	1,683,105.59	39° 16' 29.231 N	80° 50' 56.957 W
1,557.0	1.57	280.17	1,553.3	22.7	-73.5	14,262,021.89	1,683,104.90	39° 16' 29.232 N	80° 50' 56.966 W
1,582.0	1.50	282.12	1,578.3	22.8	-74.1	14,262,022.02	1,683,104.25	39° 16' 29.233 N	80° 50' 56.975 W
1,607.0	1.28	280.81	1,603.3	22.9	-74.7	14,262,022.14	1,683,103.65	39° 16' 29.235 N	80° 50' 56.982 W



Scientific Drilling International  
Survey Report - Geographic



**Company:** Antero Resources  
**Project:** Doddridge County WV  
**Site:** McGill Pad: Hormels/Mash/Nero/Vonda/Wilhelm  
**Well:** Wilhelm Unit 2H  
**Wellbore:** Original Wellpath  
**Design:** As Drilled

**Local Co-ordinate Reference:** Well Wilhelm Unit 2H  
**TVD Reference:** PD 525: 1164 GL' + 19' KB @ 1183.0  
**MD Reference:** PD 525: 1164 GL' + 19' KB @ 1183.0  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Antero NE

RECEIVED  
Office of Oil and Gas  
NOV - 2 2017  
WV Department of  
Environmental Protection

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,632.0	1.25	282.40	1,628.3	23.0	-75.3	14,262,022.25	1,683,103.11	39° 16' 29.236 N	80° 50' 56.989 W
1,657.0	1.11	284.96	1,653.3	23.2	-75.8	14,262,022.37	1,683,102.61	39° 16' 29.237 N	80° 50' 56.995 W
1,682.0	0.98	284.16	1,678.2	23.3	-76.2	14,262,022.49	1,683,102.17	39° 16' 29.238 N	80° 50' 57.001 W
1,707.0	0.94	287.16	1,703.2	23.4	-76.6	14,262,022.60	1,683,101.77	39° 16' 29.239 N	80° 50' 57.006 W
1,732.0	0.78	285.74	1,728.2	23.5	-77.0	14,262,022.71	1,683,101.41	39° 16' 29.240 N	80° 50' 57.011 W
1,757.0	0.68	288.05	1,753.2	23.6	-77.3	14,262,022.80	1,683,101.10	39° 16' 29.241 N	80° 50' 57.015 W
1,782.0	0.55	288.98	1,778.2	23.7	-77.5	14,262,022.88	1,683,100.85	39° 16' 29.242 N	80° 50' 57.018 W
1,807.0	0.59	286.62	1,803.2	23.7	-77.8	14,262,022.96	1,683,100.61	39° 16' 29.243 N	80° 50' 57.021 W
1,832.0	0.52	290.14	1,828.2	23.8	-78.0	14,262,023.04	1,683,100.38	39° 16' 29.244 N	80° 50' 57.024 W
1,857.0	0.56	289.72	1,853.2	23.9	-78.2	14,262,023.12	1,683,100.16	39° 16' 29.244 N	80° 50' 57.027 W
1,882.0	0.45	291.88	1,878.2	24.0	-78.4	14,262,023.19	1,683,099.95	39° 16' 29.245 N	80° 50' 57.029 W
1,907.0	0.49	290.74	1,903.2	24.1	-78.6	14,262,023.27	1,683,099.76	39° 16' 29.246 N	80° 50' 57.032 W
1,932.0	0.45	285.89	1,928.2	24.1	-78.8	14,262,023.33	1,683,099.57	39° 16' 29.246 N	80° 50' 57.034 W
1,957.0	0.36	292.38	1,953.2	24.2	-79.0	14,262,023.39	1,683,099.40	39° 16' 29.247 N	80° 50' 57.036 W
1,982.0	0.32	287.91	1,978.2	24.2	-79.1	14,262,023.44	1,683,099.26	39° 16' 29.248 N	80° 50' 57.038 W
2,007.0	0.34	281.29	2,003.2	24.3	-79.3	14,262,023.48	1,683,099.12	39° 16' 29.248 N	80° 50' 57.040 W
2,032.0	0.34	292.88	2,028.2	24.3	-79.4	14,262,023.52	1,683,098.98	39° 16' 29.248 N	80° 50' 57.042 W
2,057.0	0.28	274.25	2,053.2	24.3	-79.5	14,262,023.55	1,683,098.85	39° 16' 29.249 N	80° 50' 57.043 W
2,082.0	0.29	283.77	2,078.2	24.4	-79.7	14,262,023.57	1,683,098.73	39° 16' 29.249 N	80° 50' 57.045 W
2,107.0	0.25	282.75	2,103.2	24.4	-79.8	14,262,023.60	1,683,098.62	39° 16' 29.249 N	80° 50' 57.046 W
2,132.0	0.24	277.27	2,128.2	24.4	-79.9	14,262,023.62	1,683,098.51	39° 16' 29.249 N	80° 50' 57.048 W
2,157.0	0.29	290.49	2,153.2	24.4	-80.0	14,262,023.65	1,683,098.40	39° 16' 29.250 N	80° 50' 57.049 W
2,182.0	0.15	307.27	2,178.2	24.5	-80.1	14,262,023.69	1,683,098.32	39° 16' 29.250 N	80° 50' 57.050 W
2,207.0	0.19	310.14	2,203.2	24.5	-80.1	14,262,023.74	1,683,098.26	39° 16' 29.250 N	80° 50' 57.051 W
2,232.0	0.20	310.76	2,228.2	24.6	-80.2	14,262,023.79	1,683,098.19	39° 16' 29.251 N	80° 50' 57.052 W
2,257.0	0.18	316.06	2,253.2	24.6	-80.3	14,262,023.85	1,683,098.13	39° 16' 29.252 N	80° 50' 57.052 W
2,282.0	0.11	311.75	2,278.2	24.7	-80.3	14,262,023.89	1,683,098.09	39° 16' 29.252 N	80° 50' 57.053 W
2,307.0	0.20	322.02	2,303.2	24.7	-80.4	14,262,023.94	1,683,098.04	39° 16' 29.253 N	80° 50' 57.053 W
2,332.0	0.18	316.71	2,328.2	24.8	-80.4	14,262,024.01	1,683,097.99	39° 16' 29.253 N	80° 50' 57.054 W
2,357.0	0.11	324.76	2,353.2	24.8	-80.4	14,262,024.06	1,683,097.95	39° 16' 29.254 N	80° 50' 57.055 W
2,382.0	0.15	285.30	2,378.2	24.9	-80.5	14,262,024.08	1,683,097.90	39° 16' 29.254 N	80° 50' 57.055 W
2,407.0	0.11	291.93	2,403.2	24.9	-80.5	14,262,024.10	1,683,097.85	39° 16' 29.254 N	80° 50' 57.056 W
2,432.0	0.11	290.96	2,428.2	24.9	-80.6	14,262,024.12	1,683,097.80	39° 16' 29.254 N	80° 50' 57.056 W
2,457.0	0.13	303.06	2,453.2	24.9	-80.6	14,262,024.14	1,683,097.76	39° 16' 29.254 N	80° 50' 57.057 W
2,482.0	0.19	292.15	2,478.2	25.0	-80.7	14,262,024.17	1,683,097.70	39° 16' 29.255 N	80° 50' 57.058 W
2,507.0	0.20	299.87	2,503.2	25.0	-80.8	14,262,024.21	1,683,097.62	39° 16' 29.255 N	80° 50' 57.059 W
2,532.0	0.24	292.45	2,528.2	25.0	-80.9	14,262,024.25	1,683,097.53	39° 16' 29.256 N	80° 50' 57.060 W
2,557.0	0.25	298.59	2,553.2	25.1	-81.0	14,262,024.30	1,683,097.44	39° 16' 29.256 N	80° 50' 57.061 W
2,582.0	0.32	298.44	2,578.2	25.1	-81.1	14,262,024.36	1,683,097.33	39° 16' 29.257 N	80° 50' 57.063 W
2,607.0	0.33	295.28	2,603.2	25.2	-81.2	14,262,024.42	1,683,097.20	39° 16' 29.257 N	80° 50' 57.064 W
2,632.0	0.40	301.75	2,628.2	25.3	-81.3	14,262,024.50	1,683,097.06	39° 16' 29.258 N	80° 50' 57.066 W
2,657.0	0.34	302.07	2,653.2	25.4	-81.5	14,262,024.58	1,683,096.92	39° 16' 29.259 N	80° 50' 57.068 W
2,682.0	0.31	304.57	2,678.2	25.4	-81.6	14,262,024.66	1,683,096.81	39° 16' 29.260 N	80° 50' 57.069 W
2,707.0	0.39	304.42	2,703.2	25.5	-81.7	14,262,024.75	1,683,096.68	39° 16' 29.261 N	80° 50' 57.071 W
2,732.0	0.39	301.90	2,728.2	25.6	-81.9	14,262,024.84	1,683,096.54	39° 16' 29.261 N	80° 50' 57.073 W
2,757.0	0.45	302.80	2,753.2	25.7	-82.0	14,262,024.94	1,683,096.38	39° 16' 29.262 N	80° 50' 57.075 W
2,782.0	0.44	304.11	2,778.2	25.8	-82.2	14,262,025.05	1,683,096.22	39° 16' 29.263 N	80° 50' 57.077 W
2,807.0	0.40	307.38	2,803.2	25.9	-82.3	14,262,025.15	1,683,096.07	39° 16' 29.265 N	80° 50' 57.078 W
2,832.0	0.48	306.15	2,828.2	26.1	-82.5	14,262,025.27	1,683,095.92	39° 16' 29.266 N	80° 50' 57.080 W
2,857.0	0.43	306.75	2,853.2	26.2	-82.6	14,262,025.39	1,683,095.76	39° 16' 29.267 N	80° 50' 57.082 W
2,882.0	0.50	306.46	2,878.2	26.3	-82.8	14,262,025.51	1,683,095.60	39° 16' 29.268 N	80° 50' 57.085 W
2,907.0	0.49	306.26	2,903.2	26.4	-83.0	14,262,025.64	1,683,095.42	39° 16' 29.269 N	80° 50' 57.087 W
2,932.0	0.59	327.29	2,928.2	26.6	-83.1	14,262,025.81	1,683,095.27	39° 16' 29.271 N	80° 50' 57.089 W
2,957.0	0.57	309.24	2,953.2	26.8	-83.3	14,262,025.99	1,683,095.10	39° 16' 29.273 N	80° 50' 57.091 W
2,982.0	0.50	341.89	2,978.2	27.0	-83.4	14,262,026.18	1,683,094.97	39° 16' 29.275 N	80° 50' 57.092 W



Scientific Drilling International  
Survey Report - Geographic



**Company:** Antero Resources  
**Project:** Doddridge County WV  
**Site:** McGill Pad; Hormels/Mash/Nero/Vonda/Wilhelm  
**Well:** Wilhelm Unit 2H  
**Wellbore:** Original Wellpath  
**Design:** As Drilled

**Local Co-ordinate Reference:** Well Wilhelm Unit 2H  
**TVD Reference:** PD 525: 1164 GL' + 19' KB @ 1183.0usft  
**MD Reference:** PD 525: 1164 GL' + 19' KB @ 1183.0usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Antero NE

RECEIVED  
Office of Oil and Gas

NOV - 2 2017

Survey

WV Department of  
Environmental Protection

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
3,007.0	0.64	323.95	3,003.2	27.2	-83.5	14,262,026.39	1,683,094.85	39° 16' 29.277 N	80° 50' 57.094 W
3,032.0	0.65	317.38	3,028.2	27.4	-83.7	14,262,026.61	1,683,094.68	39° 16' 29.279 N	80° 50' 57.096 W
3,057.0	0.67	312.89	3,053.2	27.6	-83.9	14,262,026.81	1,683,094.47	39° 16' 29.281 N	80° 50' 57.099 W
3,082.0	0.69	311.38	3,078.2	27.8	-84.1	14,262,027.01	1,683,094.25	39° 16' 29.283 N	80° 50' 57.102 W
3,107.0	0.67	316.01	3,103.2	28.0	-84.4	14,262,027.22	1,683,094.04	39° 16' 29.285 N	80° 50' 57.104 W
3,132.0	0.69	318.51	3,128.2	28.2	-84.6	14,262,027.44	1,683,093.84	39° 16' 29.287 N	80° 50' 57.107 W
3,157.0	0.74	314.11	3,153.2	28.4	-84.8	14,262,027.66	1,683,093.62	39° 16' 29.289 N	80° 50' 57.110 W
3,182.0	0.70	318.11	3,178.2	28.7	-85.0	14,262,027.89	1,683,093.40	39° 16' 29.292 N	80° 50' 57.112 W
3,207.0	0.67	314.96	3,203.2	28.9	-85.2	14,262,028.10	1,683,093.20	39° 16' 29.294 N	80° 50' 57.115 W
3,232.0	0.72	315.29	3,228.2	29.1	-85.4	14,262,028.32	1,683,092.98	39° 16' 29.296 N	80° 50' 57.118 W
3,257.0	0.66	317.62	3,253.2	29.3	-85.6	14,262,028.54	1,683,092.78	39° 16' 29.298 N	80° 50' 57.120 W
3,282.0	0.69	313.13	3,278.2	29.5	-85.8	14,262,028.75	1,683,092.57	39° 16' 29.300 N	80° 50' 57.123 W
3,307.0	0.70	306.85	3,303.2	29.7	-86.1	14,262,028.94	1,683,092.34	39° 16' 29.302 N	80° 50' 57.126 W
3,332.0	0.59	319.62	3,328.2	29.9	-86.3	14,262,029.13	1,683,092.13	39° 16' 29.304 N	80° 50' 57.129 W
3,357.0	0.57	318.47	3,353.2	30.1	-86.4	14,262,029.32	1,683,091.97	39° 16' 29.306 N	80° 50' 57.131 W
3,382.0	0.59	313.85	3,378.2	30.3	-86.6	14,262,029.50	1,683,091.79	39° 16' 29.308 N	80° 50' 57.133 W
3,407.0	0.55	316.60	3,403.2	30.5	-86.8	14,262,029.68	1,683,091.62	39° 16' 29.309 N	80° 50' 57.135 W
3,432.0	0.62	308.77	3,428.2	30.6	-87.0	14,262,029.85	1,683,091.43	39° 16' 29.311 N	80° 50' 57.137 W
3,457.0	0.61	326.44	3,453.2	30.8	-87.1	14,262,030.05	1,683,091.25	39° 16' 29.313 N	80° 50' 57.140 W
3,482.0	0.57	319.00	3,478.2	31.0	-87.3	14,262,030.25	1,683,091.09	39° 16' 29.315 N	80° 50' 57.142 W
3,507.0	0.61	320.41	3,503.2	31.2	-87.5	14,262,030.45	1,683,090.93	39° 16' 29.317 N	80° 50' 57.144 W
3,532.0	0.63	323.76	3,528.2	31.4	-87.6	14,262,030.66	1,683,090.76	39° 16' 29.319 N	80° 50' 57.146 W
3,557.0	0.68	323.70	3,553.2	31.7	-87.8	14,262,030.89	1,683,090.59	39° 16' 29.321 N	80° 50' 57.148 W
3,582.0	0.70	322.62	3,578.2	31.9	-88.0	14,262,031.13	1,683,090.41	39° 16' 29.324 N	80° 50' 57.150 W
3,607.0	0.73	317.34	3,603.2	32.2	-88.2	14,262,031.37	1,683,090.21	39° 16' 29.326 N	80° 50' 57.153 W
3,632.0	0.66	319.96	3,628.2	32.4	-88.4	14,262,031.60	1,683,090.01	39° 16' 29.328 N	80° 50' 57.155 W
3,657.0	0.64	316.60	3,653.2	32.6	-88.6	14,262,031.81	1,683,089.82	39° 16' 29.330 N	80° 50' 57.158 W
3,682.0	0.63	323.13	3,678.2	32.8	-88.8	14,262,032.02	1,683,089.64	39° 16' 29.333 N	80° 50' 57.160 W
3,707.0	0.59	317.37	3,703.2	33.0	-88.9	14,262,032.23	1,683,089.47	39° 16' 29.335 N	80° 50' 57.162 W
3,732.0	0.66	324.69	3,728.2	33.2	-89.1	14,262,032.44	1,683,089.30	39° 16' 29.337 N	80° 50' 57.164 W
3,757.0	0.70	324.47	3,753.2	33.5	-89.3	14,262,032.68	1,683,089.13	39° 16' 29.339 N	80° 50' 57.167 W
3,782.0	0.73	321.27	3,778.2	33.7	-89.5	14,262,032.93	1,683,088.94	39° 16' 29.342 N	80° 50' 57.169 W
3,807.0	0.72	325.17	3,803.2	34.0	-89.6	14,262,033.18	1,683,088.75	39° 16' 29.344 N	80° 50' 57.171 W
3,832.0	0.74	322.04	3,828.2	34.2	-89.8	14,262,033.44	1,683,088.56	39° 16' 29.347 N	80° 50' 57.174 W
3,857.0	0.74	318.60	3,853.2	34.5	-90.0	14,262,033.69	1,683,088.36	39° 16' 29.349 N	80° 50' 57.176 W
3,882.0	0.75	316.20	3,878.2	34.7	-90.3	14,262,033.93	1,683,088.14	39° 16' 29.351 N	80° 50' 57.179 W
3,907.0	0.68	318.70	3,903.2	34.9	-90.5	14,262,034.16	1,683,087.93	39° 16' 29.354 N	80° 50' 57.182 W
3,932.0	0.65	317.17	3,928.2	35.2	-90.7	14,262,034.37	1,683,087.73	39° 16' 29.356 N	80° 50' 57.184 W
3,957.0	0.64	325.68	3,953.2	35.4	-90.8	14,262,034.59	1,683,087.56	39° 16' 29.358 N	80° 50' 57.187 W
3,982.0	0.56	320.92	3,978.1	35.6	-91.0	14,262,034.80	1,683,087.40	39° 16' 29.360 N	80° 50' 57.189 W
4,007.0	0.68	323.16	4,003.1	35.8	-91.2	14,262,035.01	1,683,087.24	39° 16' 29.362 N	80° 50' 57.191 W
4,032.0	0.67	321.03	4,028.1	36.0	-91.3	14,262,035.25	1,683,087.06	39° 16' 29.364 N	80° 50' 57.193 W
4,057.0	0.66	311.66	4,053.1	36.2	-91.5	14,262,035.46	1,683,086.86	39° 16' 29.367 N	80° 50' 57.196 W
4,082.0	0.65	314.04	4,078.1	36.4	-91.7	14,262,035.65	1,683,086.65	39° 16' 29.368 N	80° 50' 57.198 W
4,107.0	0.70	317.52	4,103.1	36.6	-92.0	14,262,035.86	1,683,086.44	39° 16' 29.371 N	80° 50' 57.201 W
4,132.0	0.61	315.62	4,128.1	36.9	-92.1	14,262,036.07	1,683,086.25	39° 16' 29.373 N	80° 50' 57.203 W
4,157.0	0.76	312.87	4,153.1	37.1	-92.4	14,262,036.28	1,683,086.03	39° 16' 29.375 N	80° 50' 57.206 W
4,182.0	0.67	309.51	4,178.1	37.3	-92.6	14,262,036.48	1,683,085.80	39° 16' 29.377 N	80° 50' 57.209 W
4,207.0	0.63	315.85	4,203.1	37.5	-92.8	14,262,036.67	1,683,085.59	39° 16' 29.379 N	80° 50' 57.212 W
4,232.0	0.54	321.41	4,228.1	37.6	-93.0	14,262,036.86	1,683,085.42	39° 16' 29.380 N	80° 50' 57.214 W
4,257.0	0.60	309.11	4,253.1	37.8	-93.2	14,262,037.04	1,683,085.24	39° 16' 29.382 N	80° 50' 57.216 W
4,282.0	0.53	310.86	4,278.1	38.0	-93.3	14,262,037.20	1,683,085.05	39° 16' 29.384 N	80° 50' 57.218 W
4,307.0	0.53	313.19	4,303.1	38.1	-93.5	14,262,037.35	1,683,084.88	39° 16' 29.385 N	80° 50' 57.221 W
4,332.0	0.50	310.72	4,328.1	38.3	-93.7	14,262,037.50	1,683,084.72	39° 16' 29.387 N	80° 50' 57.223 W
4,357.0	0.50	307.57	4,353.1	38.4	-93.8	14,262,037.64	1,683,084.55	39° 16' 29.388 N	80° 50' 57.225 W



Scientific Drilling International  
Survey Report - Geographic



**Company:** Antero Resources  
**Project:** Doddridge County WV  
**Site:** McGill Pad: Hormels/Mash/Nero/Vonda/Wilhelm  
**Well:** Wilhelm Unit 2H  
**Wellbore:** Original Wellpath  
**Design:** As Drilled

**Local Co-ordinate Reference:** Well Wilhelm Unit 2H  
**TVD Reference:** PD 525: 1164 GL' + 19' KB @ 1183.0usft  
**MD Reference:** PD 525: 1164 GL' + 19' KB @ 1183.0usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Antero NE

RECEIVED  
Office of Oil and Gas  
NOV - 2 2017

WV Department of  
Environmental Protection

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,382.0	0.43	313.74	4,378.1	38.6	-94.0	14,262,037.77	1,683,084.39	39° 16' 29.389 N	80° 50' 57.227 W
4,407.0	0.43	316.42	4,403.1	38.7	-94.1	14,262,037.90	1,683,084.26	39° 16' 29.391 N	80° 50' 57.228 W
4,432.0	0.50	311.05	4,428.1	38.8	-94.3	14,262,038.04	1,683,084.11	39° 16' 29.392 N	80° 50' 57.230 W
4,457.0	0.44	312.72	4,453.1	39.0	-94.4	14,262,038.18	1,683,083.96	39° 16' 29.394 N	80° 50' 57.232 W
4,482.0	0.38	304.10	4,478.1	39.1	-94.6	14,262,038.29	1,683,083.82	39° 16' 29.395 N	80° 50' 57.234 W
4,507.0	0.36	317.24	4,503.1	39.2	-94.7	14,262,038.40	1,683,083.70	39° 16' 29.396 N	80° 50' 57.236 W
4,532.0	0.25	319.45	4,528.1	39.3	-94.8	14,262,038.50	1,683,083.61	39° 16' 29.397 N	80° 50' 57.237 W
4,557.0	0.20	308.72	4,553.1	39.3	-94.9	14,262,038.56	1,683,083.54	39° 16' 29.397 N	80° 50' 57.238 W
4,582.0	0.16	317.61	4,578.1	39.4	-94.9	14,262,038.62	1,683,083.48	39° 16' 29.398 N	80° 50' 57.238 W
4,607.0	0.21	334.55	4,603.1	39.5	-95.0	14,262,038.68	1,683,083.44	39° 16' 29.399 N	80° 50' 57.239 W
4,632.0	0.21	317.19	4,628.1	39.5	-95.0	14,262,038.76	1,683,083.39	39° 16' 29.399 N	80° 50' 57.240 W
4,657.0	0.13	326.20	4,653.1	39.6	-95.1	14,262,038.82	1,683,083.34	39° 16' 29.400 N	80° 50' 57.240 W
4,682.0	0.18	345.24	4,678.1	39.7	-95.1	14,262,038.88	1,683,083.32	39° 16' 29.400 N	80° 50' 57.240 W
4,707.0	0.18	346.06	4,703.1	39.7	-95.1	14,262,038.95	1,683,083.30	39° 16' 29.401 N	80° 50' 57.241 W
4,732.0	0.17	342.81	4,728.1	39.8	-95.1	14,262,039.03	1,683,083.28	39° 16' 29.402 N	80° 50' 57.241 W
4,757.0	0.15	359.72	4,753.1	39.9	-95.1	14,262,039.10	1,683,083.27	39° 16' 29.403 N	80° 50' 57.241 W
4,782.0	0.26	27.14	4,778.1	40.0	-95.1	14,262,039.18	1,683,083.29	39° 16' 29.403 N	80° 50' 57.241 W
4,807.0	0.21	42.37	4,803.1	40.0	-95.0	14,262,039.26	1,683,083.35	39° 16' 29.404 N	80° 50' 57.240 W
4,832.0	0.18	23.06	4,828.1	40.1	-95.0	14,262,039.33	1,683,083.39	39° 16' 29.405 N	80° 50' 57.239 W
4,857.0	0.22	34.71	4,853.1	40.2	-95.0	14,262,039.41	1,683,083.44	39° 16' 29.406 N	80° 50' 57.239 W
4,882.0	0.25	29.97	4,878.1	40.3	-94.9	14,262,039.50	1,683,083.49	39° 16' 29.407 N	80° 50' 57.238 W
4,907.0	0.19	348.33	4,903.1	40.4	-94.9	14,262,039.58	1,683,083.51	39° 16' 29.407 N	80° 50' 57.238 W
4,932.0	0.16	313.95	4,928.1	40.4	-94.9	14,262,039.65	1,683,083.48	39° 16' 29.408 N	80° 50' 57.238 W
4,957.0	0.17	47.41	4,953.1	40.5	-94.9	14,262,039.70	1,683,083.48	39° 16' 29.409 N	80° 50' 57.238 W
4,982.0	0.21	21.24	4,978.1	40.5	-94.9	14,262,039.77	1,683,083.52	39° 16' 29.409 N	80° 50' 57.238 W
5,007.0	0.25	31.55	5,003.1	40.6	-94.8	14,262,039.85	1,683,083.57	39° 16' 29.410 N	80° 50' 57.237 W
5,032.0	0.22	27.34	5,028.1	40.7	-94.8	14,262,039.94	1,683,083.62	39° 16' 29.411 N	80° 50' 57.237 W
5,057.0	0.29	27.14	5,053.1	40.8	-94.7	14,262,040.04	1,683,083.67	39° 16' 29.412 N	80° 50' 57.236 W
5,082.0	0.21	24.43	5,078.1	40.9	-94.7	14,262,040.14	1,683,083.72	39° 16' 29.413 N	80° 50' 57.235 W
5,107.0	0.27	20.06	5,103.1	41.0	-94.6	14,262,040.24	1,683,083.76	39° 16' 29.414 N	80° 50' 57.235 W
5,132.0	0.24	32.79	5,128.1	41.1	-94.6	14,262,040.34	1,683,083.80	39° 16' 29.415 N	80° 50' 57.234 W
5,157.0	0.33	23.89	5,153.1	41.2	-94.5	14,262,040.45	1,683,083.86	39° 16' 29.416 N	80° 50' 57.233 W
5,182.0	0.31	26.83	5,178.1	41.4	-94.5	14,262,040.57	1,683,083.92	39° 16' 29.417 N	80° 50' 57.233 W
5,207.0	0.26	9.01	5,203.1	41.5	-94.4	14,262,040.69	1,683,083.96	39° 16' 29.418 N	80° 50' 57.232 W
5,232.0	0.21	38.06	5,228.1	41.6	-94.4	14,262,040.78	1,683,084.00	39° 16' 29.419 N	80° 50' 57.232 W
5,257.0	0.23	30.45	5,253.1	41.6	-94.3	14,262,040.86	1,683,084.05	39° 16' 29.420 N	80° 50' 57.231 W
5,282.0	0.25	21.38	5,278.1	41.7	-94.3	14,262,040.96	1,683,084.10	39° 16' 29.421 N	80° 50' 57.230 W
5,307.0	0.26	43.12	5,303.1	41.8	-94.2	14,262,041.05	1,683,084.16	39° 16' 29.422 N	80° 50' 57.230 W
5,332.0	0.30	52.13	5,328.1	41.9	-94.1	14,262,041.13	1,683,084.25	39° 16' 29.423 N	80° 50' 57.229 W
5,357.0	0.17	42.39	5,353.1	42.0	-94.1	14,262,041.20	1,683,084.32	39° 16' 29.423 N	80° 50' 57.228 W
5,382.0	0.19	75.53	5,378.1	42.0	-94.0	14,262,041.23	1,683,084.39	39° 16' 29.424 N	80° 50' 57.227 W
5,407.0	0.09	17.20	5,403.1	42.0	-94.0	14,262,041.26	1,683,084.43	39° 16' 29.424 N	80° 50' 57.226 W
5,432.0	0.04	326.11	5,428.1	42.1	-94.0	14,262,041.29	1,683,084.44	39° 16' 29.424 N	80° 50' 57.226 W
5,457.0	0.06	13.66	5,453.1	42.1	-94.0	14,262,041.31	1,683,084.43	39° 16' 29.424 N	80° 50' 57.226 W
5,482.0	0.08	299.31	5,478.1	42.1	-94.0	14,262,041.33	1,683,084.42	39° 16' 29.425 N	80° 50' 57.226 W
5,507.0	0.03	287.36	5,503.1	42.1	-94.0	14,262,041.34	1,683,084.40	39° 16' 29.425 N	80° 50' 57.227 W
5,532.0	0.04	28.55	5,528.1	42.1	-94.0	14,262,041.35	1,683,084.40	39° 16' 29.425 N	80° 50' 57.227 W
5,557.0	0.04	262.68	5,553.1	42.1	-94.0	14,262,041.36	1,683,084.39	39° 16' 29.425 N	80° 50' 57.227 W
5,582.0	0.14	112.04	5,578.1	42.1	-94.0	14,262,041.34	1,683,084.41	39° 16' 29.425 N	80° 50' 57.226 W
5,607.0	0.10	103.32	5,603.1	42.1	-93.9	14,262,041.33	1,683,084.46	39° 16' 29.425 N	80° 50' 57.226 W
5,632.0	0.03	359.59	5,628.1	42.1	-93.9	14,262,041.33	1,683,084.48	39° 16' 29.425 N	80° 50' 57.226 W
5,657.0	0.12	94.72	5,653.1	42.1	-93.9	14,262,041.33	1,683,084.51	39° 16' 29.425 N	80° 50' 57.225 W
5,682.0	0.20	132.84	5,678.1	42.1	-93.8	14,262,041.30	1,683,084.57	39° 16' 29.424 N	80° 50' 57.225 W
5,707.0	0.20	148.51	5,703.1	42.0	-93.8	14,262,041.24	1,683,084.62	39° 16' 29.424 N	80° 50' 57.224 W
5,732.0	0.18	124.19	5,728.1	42.0	-93.7	14,262,041.18	1,683,084.68	39° 16' 29.423 N	80° 50' 57.223 W



Scientific Drilling International  
Survey Report - Geographic



<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well Wilhelm Unit 2H
<b>Project:</b>	Doddridge County WV	<b>TVD Reference:</b>	PD 525: 1164 GL' + 19' KB @ 1183.0usft
<b>Site:</b>	McGill Pad: Hormels/Mash/Nero/Vonda/Wilhelm	<b>MD Reference:</b>	PD 525: 1164 GL' + 19' KB @ 1183.0usft
<b>Well:</b>	Wilhelm 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

RECEIVED  
Office of Oil and Gas  
NOV - 2 2017

Survey										WV Department of Environmental Protection	
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude		
5,757.0	0.21	86.12	5,753.1	41.9	-93.6	14,262,041.16	1,683,084.76	39° 16' 29.423 N	80° 50' 57.222 W		
5,782.0	0.16	83.81	5,778.1	41.9	-93.6	14,262,041.16	1,683,084.84	39° 16' 29.423 N	80° 50' 57.221 W		
5,807.0	0.33	147.50	5,803.1	41.9	-93.5	14,262,041.11	1,683,084.91	39° 16' 29.422 N	80° 50' 57.220 W		
5,832.0	0.53	92.57	5,828.1	41.8	-93.3	14,262,041.04	1,683,085.06	39° 16' 29.422 N	80° 50' 57.218 W		
5,852.2	0.14	116.78	5,848.4	41.8	-93.2	14,262,041.03	1,683,085.18	39° 16' 29.422 N	80° 50' 57.217 W		
5,903.0	0.70	108.27	5,899.1	41.7	-92.9	14,262,040.90	1,683,085.53	39° 16' 29.420 N	80° 50' 57.212 W		
<b>First SDI MWD @ 5903</b>											
5,948.0	4.95	98.01	5,944.0	41.3	-90.7	14,262,040.54	1,683,087.71	39° 16' 29.417 N	80° 50' 57.184 W		
5,992.0	11.04	96.28	5,987.6	40.6	-84.6	14,262,039.82	1,683,093.79	39° 16' 29.410 N	80° 50' 57.107 W		
6,037.0	18.23	89.38	6,031.1	40.2	-73.3	14,262,039.42	1,683,105.12	39° 16' 29.405 N	80° 50' 56.963 W		
6,082.0	23.84	90.50	6,073.1	40.2	-57.1	14,262,039.42	1,683,121.27	39° 16' 29.405 N	80° 50' 56.758 W		
6,126.0	28.34	93.72	6,112.6	39.4	-37.8	14,262,038.66	1,683,140.59	39° 16' 29.397 N	80° 50' 56.512 W		
6,171.0	31.97	96.09	6,151.5	37.5	-15.3	14,262,036.71	1,683,163.11	39° 16' 29.378 N	80° 50' 56.226 W		
6,216.0	33.56	93.48	6,189.4	35.5	9.0	14,262,034.69	1,683,187.37	39° 16' 29.357 N	80° 50' 55.917 W		
6,261.0	33.10	82.67	6,227.0	36.3	33.6	14,262,035.50	1,683,211.99	39° 16' 29.365 N	80° 50' 55.604 W		
6,306.0	34.58	70.28	6,264.4	42.2	57.8	14,262,041.38	1,683,236.23	39° 16' 29.423 N	80° 50' 55.295 W		
6,351.0	36.00	60.73	6,301.2	53.0	81.4	14,262,052.17	1,683,259.81	39° 16' 29.529 N	80° 50' 54.995 W		
6,396.0	35.09	49.28	6,337.8	67.9	102.8	14,262,067.09	1,683,281.17	39° 16' 29.676 N	80° 50' 54.723 W		
6,440.0	34.52	39.19	6,374.0	85.8	120.3	14,262,085.02	1,683,298.65	39° 16' 29.853 N	80° 50' 54.500 W		
6,485.0	35.50	28.68	6,410.9	107.2	134.6	14,262,106.38	1,683,312.99	39° 16' 30.064 N	80° 50' 54.317 W		
6,530.0	37.26	20.12	6,447.1	131.4	145.6	14,262,130.65	1,683,323.96	39° 16' 30.304 N	80° 50' 54.177 W		
6,575.0	40.12	12.85	6,482.3	158.4	153.5	14,262,157.60	1,683,331.87	39° 16' 30.570 N	80° 50' 54.076 W		
6,605.0	42.53	10.03	6,504.8	177.8	157.4	14,262,177.01	1,683,335.79	39° 16' 30.762 N	80° 50' 54.026 W		
<b>Middlesex @ 6605</b>											
6,620.0	43.76	8.72	6,515.7	187.9	159.1	14,262,187.13	1,683,337.46	39° 16' 30.862 N	80° 50' 54.004 W		
6,665.0	47.74	6.43	6,547.1	219.9	163.3	14,262,219.08	1,683,341.69	39° 16' 31.178 N	80° 50' 53.950 W		
6,710.0	51.26	4.26	6,576.4	253.9	166.5	14,262,253.14	1,683,344.86	39° 16' 31.515 N	80° 50' 53.909 W		
6,754.0	55.82	1.74	6,602.5	289.2	168.3	14,262,288.47	1,683,346.68	39° 16' 31.864 N	80° 50' 53.885 W		
6,797.0	61.01	359.32	6,625.0	325.9	168.6	14,262,325.08	1,683,347.00	39° 16' 32.226 N	80° 50' 53.880 W		
<b>Burket @ 6797</b>											
6,799.0	61.25	359.21	6,626.0	327.6	168.6	14,262,326.83	1,683,346.98	39° 16' 32.243 N	80° 50' 53.880 W		
6,844.0	66.64	355.44	6,645.7	368.0	166.7	14,262,367.19	1,683,345.06	39° 16' 32.642 N	80° 50' 53.904 W		
6,863.0	69.20	353.95	6,652.9	385.5	165.0	14,262,384.72	1,683,343.43	39° 16' 32.816 N	80° 50' 53.924 W		
<b>Tully @ 6863</b>											
6,889.0	72.72	351.99	6,661.4	409.9	162.0	14,262,409.10	1,683,340.42	39° 16' 33.057 N	80° 50' 53.962 W		
6,934.0	76.84	349.04	6,673.2	452.7	154.9	14,262,451.91	1,683,333.26	39° 16' 33.480 N	80° 50' 54.052 W		
6,979.0	80.11	346.77	6,682.2	495.8	145.6	14,262,495.02	1,683,324.01	39° 16' 33.907 N	80° 50' 54.169 W		
6,989.0	80.96	346.18	6,683.8	505.4	143.3	14,262,504.61	1,683,321.71	39° 16' 34.001 N	80° 50' 54.198 W		
<b>Marcellus @ 6989</b>											
7,023.0	83.84	344.18	6,688.3	538.0	134.7	14,262,537.18	1,683,313.09	39° 16' 34.324 N	80° 50' 54.307 W		
7,068.0	86.51	341.33	6,692.1	580.8	121.4	14,262,580.00	1,683,299.79	39° 16' 34.747 N	80° 50' 54.475 W		
7,094.0	87.68	340.74	6,693.4	605.3	113.0	14,262,604.55	1,683,291.35	39° 16' 34.990 N	80° 50' 54.582 W		
7,139.0	89.40	340.00	6,694.6	647.7	97.8	14,262,646.92	1,683,276.24	39° 16' 35.409 N	80° 50' 54.773 W		
7,184.0	89.97	340.29	6,694.8	690.0	82.6	14,262,689.25	1,683,260.96	39° 16' 35.828 N	80° 50' 54.967 W		
7,229.0	89.43	341.15	6,695.0	732.5	67.7	14,262,731.72	1,683,246.10	39° 16' 36.248 N	80° 50' 55.155 W		
7,274.0	89.06	340.62	6,695.6	775.0	53.0	14,262,774.24	1,683,231.37	39° 16' 36.669 N	80° 50' 55.342 W		
7,363.0	89.06	340.19	6,697.1	858.9	23.1	14,262,858.07	1,683,201.52	39° 16' 37.498 N	80° 50' 55.719 W		
7,453.0	89.40	341.24	6,698.3	943.8	-6.6	14,262,943.01	1,683,171.80	39° 16' 38.339 N	80° 50' 56.096 W		
7,543.0	89.03	340.46	6,699.5	1,028.8	-36.1	14,263,028.02	1,683,142.28	39° 16' 39.180 N	80° 50' 56.469 W		
7,632.0	90.20	341.33	6,700.1	1,112.9	-65.2	14,263,112.12	1,683,113.15	39° 16' 40.012 N	80° 50' 56.838 W		
7,722.0	90.64	342.34	6,699.5	1,198.4	-93.3	14,263,197.63	1,683,085.10	39° 16' 40.858 N	80° 50' 57.193 W		
7,812.0	91.35	343.34	6,697.9	1,284.4	-119.8	14,263,283.61	1,683,058.55	39° 16' 41.708 N	80° 50' 57.529 W		
7,901.0	91.08	340.87	6,696.0	1,369.1	-147.2	14,263,368.28	1,683,031.21	39° 16' 42.546 N	80° 50' 57.875 W		
7,991.0	90.20	340.79	6,695.0	1,454.1	-176.7	14,263,453.28	1,683,001.66	39° 16' 43.387 N	80° 50' 58.249 W		



Scientific Drilling International  
Survey Report - Geographic



**Company:** Antero Resources  
**Project:** Doddridge County WV  
**Site:** McGill Pad: Hormels/Mash/Nero/Vonda/Wilhelm  
**Well:** Wilhelm Unit 2H  
**Wellbore:** Original Wellpath  
**Design:** As Drilled

**Local Co-ordinate Reference:** Well Wilhelm Unit 2H  
**TVD Reference:** PD 525: 1164 GL' + 19' KB @ 1183.0usft  
**MD Reference:** PD 525: 1164 GL' + 19' KB @ 1183.0usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Antero NE

RECEIVED  
Office of Oil and Gas

NOV - 2 2017

WV Department of  
Environmental Protection

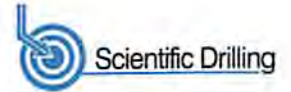
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
8,081.0	90.94	342.64	6,694.1	1,539.5	-205.0	14,263,538.73	1,682,973.42	39° 16' 44.232 N	80° 50' 58.607 W
8,171.0	91.71	343.08	6,692.0	1,625.5	-231.5	14,263,624.70	1,682,946.91	39° 16' 45.083 N	80° 50' 58.942 W
8,260.0	90.57	341.26	6,690.3	1,710.2	-258.7	14,263,709.41	1,682,919.66	39° 16' 45.921 N	80° 50' 59.287 W
8,350.0	89.56	341.45	6,690.2	1,795.5	-287.5	14,263,794.68	1,682,890.89	39° 16' 46.764 N	80° 50' 59.651 W
8,439.0	90.40	342.26	6,690.2	1,880.0	-315.2	14,263,879.26	1,682,863.17	39° 16' 47.601 N	80° 51' 0.002 W
8,529.0	91.88	344.63	6,688.4	1,966.3	-340.9	14,263,965.50	1,682,837.54	39° 16' 48.454 N	80° 51' 0.326 W
8,619.0	92.25	342.83	6,685.2	2,052.6	-366.1	14,264,051.84	1,682,812.34	39° 16' 49.308 N	80° 51' 0.645 W
8,708.0	91.61	342.01	6,682.2	2,137.4	-392.9	14,264,136.63	1,682,785.47	39° 16' 50.147 N	80° 51' 0.985 W
8,798.0	90.20	341.44	6,680.8	2,222.9	-421.1	14,264,222.08	1,682,757.25	39° 16' 50.993 N	80° 51' 1.342 W
8,888.0	89.80	342.23	6,680.8	2,308.4	-449.2	14,264,307.59	1,682,729.20	39° 16' 51.839 N	80° 51' 1.698 W
8,978.0	90.13	342.12	6,680.8	2,394.1	-476.7	14,264,393.27	1,682,701.65	39° 16' 52.686 N	80° 51' 2.046 W
9,067.0	90.03	340.52	6,680.7	2,478.4	-505.3	14,264,477.58	1,682,673.14	39° 16' 53.520 N	80° 51' 2.407 W
9,157.0	90.27	342.17	6,680.4	2,563.6	-534.0	14,264,562.85	1,682,644.36	39° 16' 54.364 N	80° 51' 2.772 W
9,247.0	91.18	341.39	6,679.3	2,649.1	-562.2	14,264,648.33	1,682,616.22	39° 16' 55.209 N	80° 51' 3.128 W
9,336.0	91.45	340.83	6,677.3	2,733.3	-591.0	14,264,732.51	1,682,587.41	39° 16' 56.042 N	80° 51' 3.492 W
9,426.0	90.47	342.86	6,675.8	2,818.8	-619.0	14,264,818.01	1,682,559.38	39° 16' 56.888 N	80° 51' 3.847 W
9,516.0	90.27	341.81	6,675.2	2,904.5	-646.3	14,264,903.77	1,682,532.07	39° 16' 57.737 N	80° 51' 4.193 W
9,606.0	90.71	343.43	6,674.4	2,990.4	-673.2	14,264,989.65	1,682,505.18	39° 16' 58.586 N	80° 51' 4.533 W
9,695.0	91.11	342.34	6,673.0	3,075.5	-699.4	14,265,074.70	1,682,479.00	39° 16' 59.428 N	80° 51' 4.865 W
9,785.0	89.46	342.46	6,672.5	3,161.3	-726.6	14,265,160.48	1,682,451.78	39° 17' 0.276 N	80° 51' 5.209 W
9,875.0	89.70	341.80	6,673.2	3,246.9	-754.2	14,265,246.14	1,682,424.17	39° 17' 1.124 N	80° 51' 5.559 W
9,965.0	90.50	342.31	6,673.1	3,332.5	-782.0	14,265,331.76	1,682,396.44	39° 17' 1.971 N	80° 51' 5.910 W
10,054.0	91.18	343.00	6,671.7	3,417.5	-808.5	14,265,416.70	1,682,369.91	39° 17' 2.811 N	80° 51' 6.245 W
10,144.0	91.21	343.05	6,669.9	3,503.5	-834.8	14,265,502.76	1,682,343.64	39° 17' 3.662 N	80° 51' 6.578 W
10,234.0	91.41	341.45	6,667.8	3,589.2	-862.2	14,265,588.45	1,682,316.21	39° 17' 4.510 N	80° 51' 6.925 W
10,324.0	90.27	340.21	6,666.5	3,674.2	-891.7	14,265,673.45	1,682,286.66	39° 17' 5.351 N	80° 51' 7.299 W
10,413.0	90.40	342.33	6,666.0	3,758.5	-920.3	14,265,757.73	1,682,258.08	39° 17' 6.185 N	80° 51' 7.661 W
10,503.0	90.71	341.29	6,665.1	3,844.0	-948.4	14,265,843.22	1,682,229.99	39° 17' 7.031 N	80° 51' 8.017 W
10,593.0	91.11	340.79	6,663.7	3,929.1	-977.6	14,265,928.33	1,682,200.75	39° 17' 7.872 N	80° 51' 8.387 W
10,682.0	90.67	342.78	6,662.3	4,013.6	-1,005.5	14,266,012.86	1,682,172.94	39° 17' 8.709 N	80° 51' 8.739 W
10,772.0	90.84	341.61	6,661.1	4,099.3	-1,033.0	14,266,098.54	1,682,145.42	39° 17' 9.556 N	80° 51' 9.087 W
10,862.0	90.00	341.44	6,660.4	4,184.7	-1,061.5	14,266,183.89	1,682,116.90	39° 17' 10.401 N	80° 51' 9.448 W
10,952.0	90.20	341.22	6,660.3	4,269.9	-1,090.3	14,266,269.16	1,682,088.09	39° 17' 11.244 N	80° 51' 9.813 W
11,041.0	90.17	342.02	6,660.0	4,354.4	-1,118.4	14,266,353.82	1,682,060.03	39° 17' 12.080 N	80° 51' 10.168 W
11,131.0	91.55	342.79	6,658.6	4,440.2	-1,145.6	14,266,439.39	1,682,032.82	39° 17' 12.928 N	80° 51' 10.513 W
11,221.0	90.74	343.39	6,656.8	4,526.3	-1,171.7	14,266,525.48	1,682,006.65	39° 17' 13.780 N	80° 51' 10.844 W
11,311.0	90.91	342.86	6,655.6	4,612.4	-1,197.9	14,266,611.60	1,681,980.53	39° 17' 14.632 N	80° 51' 11.174 W
11,400.0	90.27	343.68	6,654.6	4,697.6	-1,223.5	14,266,696.83	1,681,954.91	39° 17' 15.475 N	80° 51' 11.499 W
11,490.0	90.27	342.87	6,654.2	4,783.8	-1,249.4	14,266,783.02	1,681,929.01	39° 17' 16.328 N	80° 51' 11.826 W
11,580.0	91.05	342.63	6,653.2	4,869.7	-1,276.1	14,266,868.96	1,681,902.32	39° 17' 17.178 N	80° 51' 12.164 W
11,670.0	91.28	342.29	6,651.3	4,955.5	-1,303.2	14,266,954.76	1,681,875.21	39° 17' 18.027 N	80° 51' 12.507 W
11,759.0	90.14	342.69	6,650.2	5,040.4	-1,330.0	14,267,039.63	1,681,848.43	39° 17' 18.866 N	80° 51' 12.846 W
11,849.0	90.14	342.35	6,650.0	5,126.3	-1,357.0	14,267,125.47	1,681,821.40	39° 17' 19.716 N	80° 51' 13.189 W
11,939.0	90.74	342.37	6,649.3	5,212.0	-1,384.3	14,267,211.24	1,681,794.13	39° 17' 20.564 N	80° 51' 13.534 W
12,028.0	91.04	341.72	6,647.9	5,296.7	-1,411.7	14,267,295.89	1,681,766.69	39° 17' 21.401 N	80° 51' 13.881 W
12,118.0	91.11	342.32	6,646.3	5,382.3	-1,439.5	14,267,381.48	1,681,738.92	39° 17' 22.248 N	80° 51' 14.233 W
12,208.0	90.00	342.09	6,645.4	5,468.0	-1,467.0	14,267,467.17	1,681,711.41	39° 17' 23.096 N	80° 51' 14.581 W
12,297.0	89.97	341.78	6,645.4	5,552.6	-1,494.6	14,267,551.78	1,681,683.82	39° 17' 23.933 N	80° 51' 14.930 W
12,387.0	90.20	341.26	6,645.3	5,637.9	-1,523.1	14,267,637.14	1,681,655.29	39° 17' 24.777 N	80° 51' 15.292 W
12,477.0	90.67	341.17	6,644.6	5,723.1	-1,552.1	14,267,722.35	1,681,626.31	39° 17' 25.620 N	80° 51' 15.659 W
12,567.0	90.81	341.50	6,643.4	5,808.4	-1,580.9	14,267,807.60	1,681,597.51	39° 17' 26.464 N	80° 51' 16.023 W
12,656.0	91.18	341.30	6,641.9	5,892.7	-1,609.3	14,267,891.94	1,681,569.12	39° 17' 27.298 N	80° 51' 16.383 W
12,746.0	90.30	340.97	6,640.7	5,977.9	-1,638.4	14,267,977.10	1,681,540.03	39° 17' 28.141 N	80° 51' 16.751 W
12,836.0	89.97	340.85	6,640.5	6,062.9	-1,667.8	14,268,062.15	1,681,510.59	39° 17' 28.982 N	80° 51' 17.124 W
12,926.0	89.77	341.22	6,640.7	6,148.0	-1,697.1	14,268,147.27	1,681,481.34	39° 17' 29.824 N	80° 51' 17.494 W





# Scientific Drilling International

Survey Report - Geographic



<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well Wilhelm Unit 2H
<b>Project:</b>	Doddridge County WV	<b>TVD Reference:</b>	PD 525: 1164 GL' + 19' KB @ 1183.0usft
<b>Site:</b>	McGill Pad: Hormels/Mash/Nero/Vonda/Wilhelm	<b>MD Reference:</b>	PD 525: 1164 GL' + 19' KB @ 1183.0usft
<b>Well:</b>	Wilhelm 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

RECEIVED  
Office of Oil and Gas  
NOV - 2 2017

Survey										WV Department of Environmental Protection	
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude		
13,016.0	90.20	340.98	6,640.7	6,233.2	-1,726.2	14,268,232.41	1,681,452.19	39° 17' 30.666 N	80° 51' 17.864 W		
13,105.0	90.27	342.57	6,640.4	6,317.7	-1,754.0	14,268,316.94	1,681,424.36	39° 17' 31.503 N	80° 51' 18.216 W		
13,195.0	90.87	341.96	6,639.5	6,403.4	-1,781.5	14,268,402.66	1,681,396.94	39° 17' 32.351 N	80° 51' 18.563 W		
13,285.0	91.31	342.43	6,637.8	6,489.1	-1,809.0	14,268,488.34	1,681,369.43	39° 17' 33.198 N	80° 51' 18.911 W		
13,375.0	90.77	343.58	6,636.1	6,575.2	-1,835.3	14,268,574.39	1,681,343.13	39° 17' 34.050 N	80° 51' 19.244 W		
13,464.0	91.08	344.14	6,634.7	6,660.7	-1,860.0	14,268,659.87	1,681,318.39	39° 17' 34.895 N	80° 51' 19.557 W		
13,554.0	90.44	342.60	6,633.5	6,746.9	-1,885.8	14,268,746.09	1,681,292.63	39° 17' 35.748 N	80° 51' 19.883 W		
13,644.0	89.93	342.07	6,633.2	6,832.6	-1,913.1	14,268,831.85	1,681,265.32	39° 17' 36.596 N	80° 51' 20.229 W		
13,733.0	89.70	341.53	6,633.5	6,917.2	-1,940.9	14,268,916.40	1,681,237.53	39° 17' 37.433 N	80° 51' 20.581 W		
13,823.0	90.57	342.93	6,633.3	7,002.9	-1,968.3	14,269,002.10	1,681,210.06	39° 17' 38.281 N	80° 51' 20.929 W		
13,913.0	91.08	343.50	6,632.0	7,089.0	-1,994.3	14,269,088.26	1,681,184.07	39° 17' 39.133 N	80° 51' 21.258 W		
14,002.0	90.04	341.01	6,631.1	7,173.8	-2,021.4	14,269,173.01	1,681,156.95	39° 17' 39.971 N	80° 51' 21.601 W		
14,092.0	90.04	340.66	6,631.1	7,258.8	-2,051.0	14,269,258.02	1,681,127.41	39° 17' 40.812 N	80° 51' 21.975 W		
14,182.0	90.20	341.03	6,630.9	7,343.8	-2,080.5	14,269,343.04	1,681,097.87	39° 17' 41.654 N	80° 51' 22.349 W		
14,272.0	90.50	341.03	6,630.3	7,428.9	-2,109.8	14,269,428.15	1,681,068.62	39° 17' 42.496 N	80° 51' 22.720 W		
14,361.0	89.46	341.13	6,630.4	7,513.1	-2,138.6	14,269,512.34	1,681,039.76	39° 17' 43.328 N	80° 51' 23.085 W		
14,451.0	90.00	341.49	6,630.8	7,598.4	-2,167.5	14,269,597.59	1,681,010.92	39° 17' 44.172 N	80° 51' 23.451 W		
14,541.0	89.70	340.97	6,631.0	7,683.6	-2,196.4	14,269,682.80	1,680,981.96	39° 17' 45.015 N	80° 51' 23.818 W		
14,631.0	89.80	340.23	6,631.4	7,768.5	-2,226.3	14,269,767.69	1,680,952.07	39° 17' 45.855 N	80° 51' 24.196 W		
14,721.0	89.03	342.71	6,632.3	7,853.8	-2,254.9	14,269,853.01	1,680,923.47	39° 17' 46.699 N	80° 51' 24.558 W		
14,810.0	89.63	341.80	6,633.4	7,938.6	-2,282.0	14,269,937.77	1,680,896.35	39° 17' 47.537 N	80° 51' 24.902 W		
14,900.0	89.90	343.32	6,633.7	8,024.4	-2,309.0	14,270,023.63	1,680,869.37	39° 17' 48.387 N	80° 51' 25.243 W		
14,990.0	89.43	341.45	6,634.3	8,110.2	-2,336.3	14,270,109.41	1,680,842.14	39° 17' 49.235 N	80° 51' 25.588 W		
15,080.0	89.87	343.00	6,634.8	8,195.9	-2,363.7	14,270,195.11	1,680,814.67	39° 17' 50.083 N	80° 51' 25.936 W		
15,169.0	90.50	343.58	6,634.5	8,281.1	-2,389.3	14,270,280.35	1,680,789.08	39° 17' 50.926 N	80° 51' 26.260 W		
15,259.0	90.50	340.90	6,633.7	8,366.8	-2,416.8	14,270,366.05	1,680,761.63	39° 17' 51.774 N	80° 51' 26.607 W		
15,348.0	90.71	342.65	6,632.8	8,451.4	-2,444.6	14,270,450.57	1,680,733.79	39° 17' 52.610 N	80° 51' 26.960 W		
15,438.0	89.63	339.03	6,632.5	8,536.4	-2,474.1	14,270,535.57	1,680,704.26	39° 17' 53.451 N	80° 51' 27.334 W		
15,528.0	90.47	341.46	6,632.5	8,621.1	-2,504.5	14,270,620.27	1,680,673.84	39° 17' 54.289 N	80° 51' 27.719 W		
15,618.0	90.47	342.25	6,631.7	8,706.6	-2,532.6	14,270,705.79	1,680,645.82	39° 17' 55.135 N	80° 51' 28.074 W		
15,707.0	91.11	344.25	6,630.5	8,791.8	-2,558.2	14,270,791.00	1,680,620.17	39° 17' 55.978 N	80° 51' 28.399 W		
15,797.0	91.48	344.60	6,628.5	8,878.5	-2,582.4	14,270,877.67	1,680,596.01	39° 17' 56.835 N	80° 51' 28.705 W		
15,886.0	90.44	343.79	6,627.0	8,964.1	-2,606.6	14,270,963.29	1,680,571.78	39° 17' 57.682 N	80° 51' 29.011 W		
15,976.0	90.30	343.11	6,626.4	9,050.3	-2,632.3	14,271,049.56	1,680,546.14	39° 17' 58.536 N	80° 51' 29.336 W		
16,066.0	89.73	342.18	6,626.4	9,136.2	-2,659.1	14,271,135.47	1,680,519.29	39° 17' 59.385 N	80° 51' 29.676 W		
16,156.0	89.83	342.73	6,626.7	9,222.1	-2,686.2	14,271,221.28	1,680,492.16	39° 18' 0.234 N	80° 51' 30.019 W		
16,245.0	89.80	342.71	6,627.0	9,307.0	-2,712.7	14,271,306.26	1,680,465.73	39° 18' 1.075 N	80° 51' 30.354 W		
16,335.0	88.83	341.00	6,628.1	9,392.6	-2,740.7	14,271,391.77	1,680,437.70	39° 18' 1.921 N	80° 51' 30.709 W		
16,424.0	88.93	340.21	6,629.8	9,476.5	-2,770.2	14,271,475.71	1,680,408.15	39° 18' 2.751 N	80° 51' 31.083 W		
16,514.0	88.80	340.67	6,631.6	9,561.3	-2,800.4	14,271,560.50	1,680,378.03	39° 18' 3.590 N	80° 51' 31.465 W		
16,604.0	89.87	342.38	6,632.6	9,646.6	-2,828.9	14,271,645.85	1,680,349.51	39° 18' 4.435 N	80° 51' 31.826 W		
16,694.0	89.03	340.10	6,633.5	9,731.8	-2,857.8	14,271,731.06	1,680,320.57	39° 18' 5.278 N	80° 51' 32.193 W		
16,754.0	89.77	341.70	6,634.1	9,788.5	-2,877.5	14,271,787.75	1,680,300.94	39° 18' 5.838 N	80° 51' 32.442 W		
<b>Last SDI MWD @ 16754</b>											
16,817.0	89.77	341.70	6,634.4	9,848.3	-2,897.2	14,271,847.56	1,680,281.16	39° 18' 6.430 N	80° 51' 32.692 W		
<b>Projection To Bit @ 16817 MD / 6634 TVD</b>											



<b>Company:</b>	Antero Resources	<b>Local Co-ordinate Reference:</b>	Well Wilhelm Unit 2H
<b>Project:</b>	Doddridge County WV	<b>TVD Reference:</b>	PD 525: 1164 GL' + 19' KB @ 1183.0usft
<b>Site:</b>	McGill Pad: Hormels/Mash/Nero/Vonda/Wilhelm	<b>MD Reference:</b>	PD 525: 1164 GL' + 19' KB @ 1183.0usft
<b>Well:</b>	Wilhelm 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

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
6,605.0	6,504.8	Middlesex @ 6605		0.00		RECEIVED Office of Oil and Gas NOV - 2 2017 WV Department of Environmental Protection
6,797.0	6,625.0	Burket @ 6797		0.00		
6,863.0	6,652.9	Tully @ 6863		0.00		
6,989.0	6,683.8	Marcellus @ 6989		0.00		

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
5,903.0	5,899.1	41.7	-92.9	First SDI MWD @ 5903	
16,754.0	6,634.1	9,788.5	-2,877.5	Last SDI MWD @ 16754	
16,817.0	6,634.4	9,848.3	-2,897.2	Projection To Bit @ 16817 MD / 6634 TVD	

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