



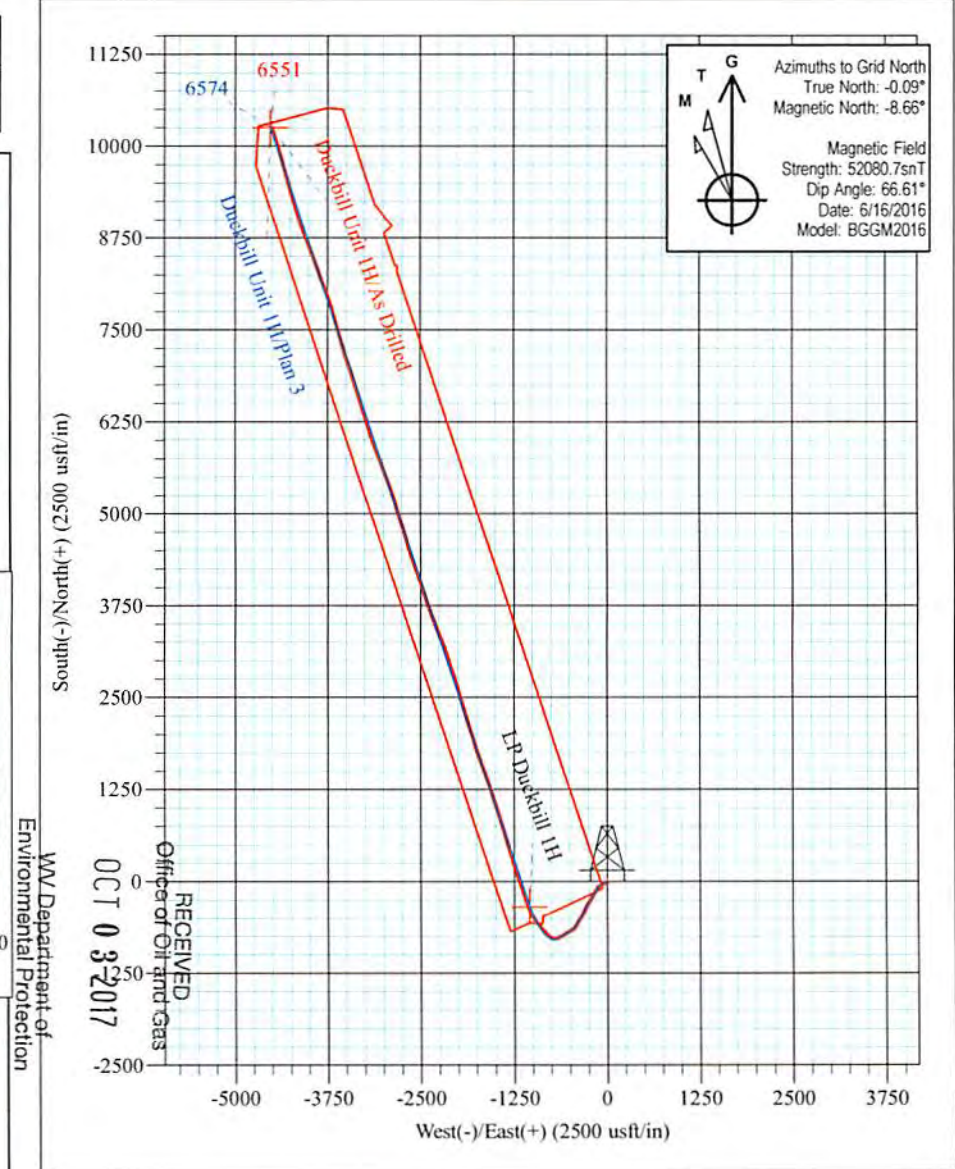
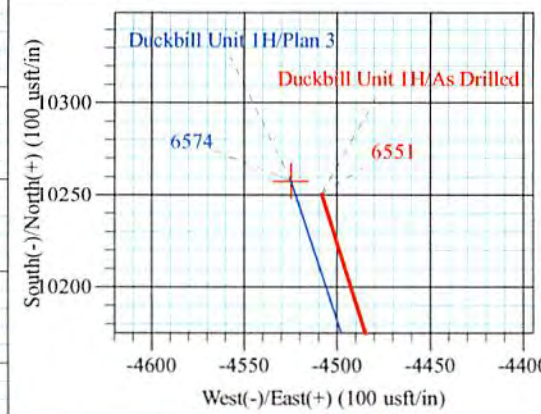
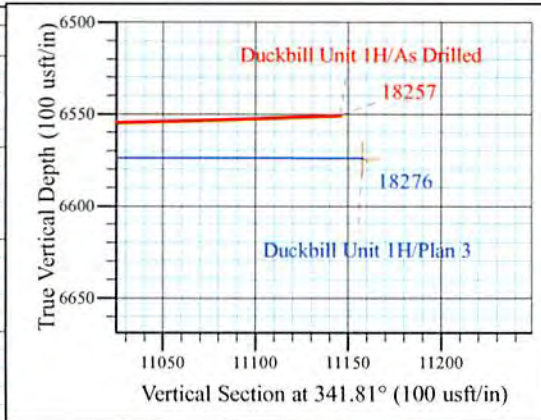
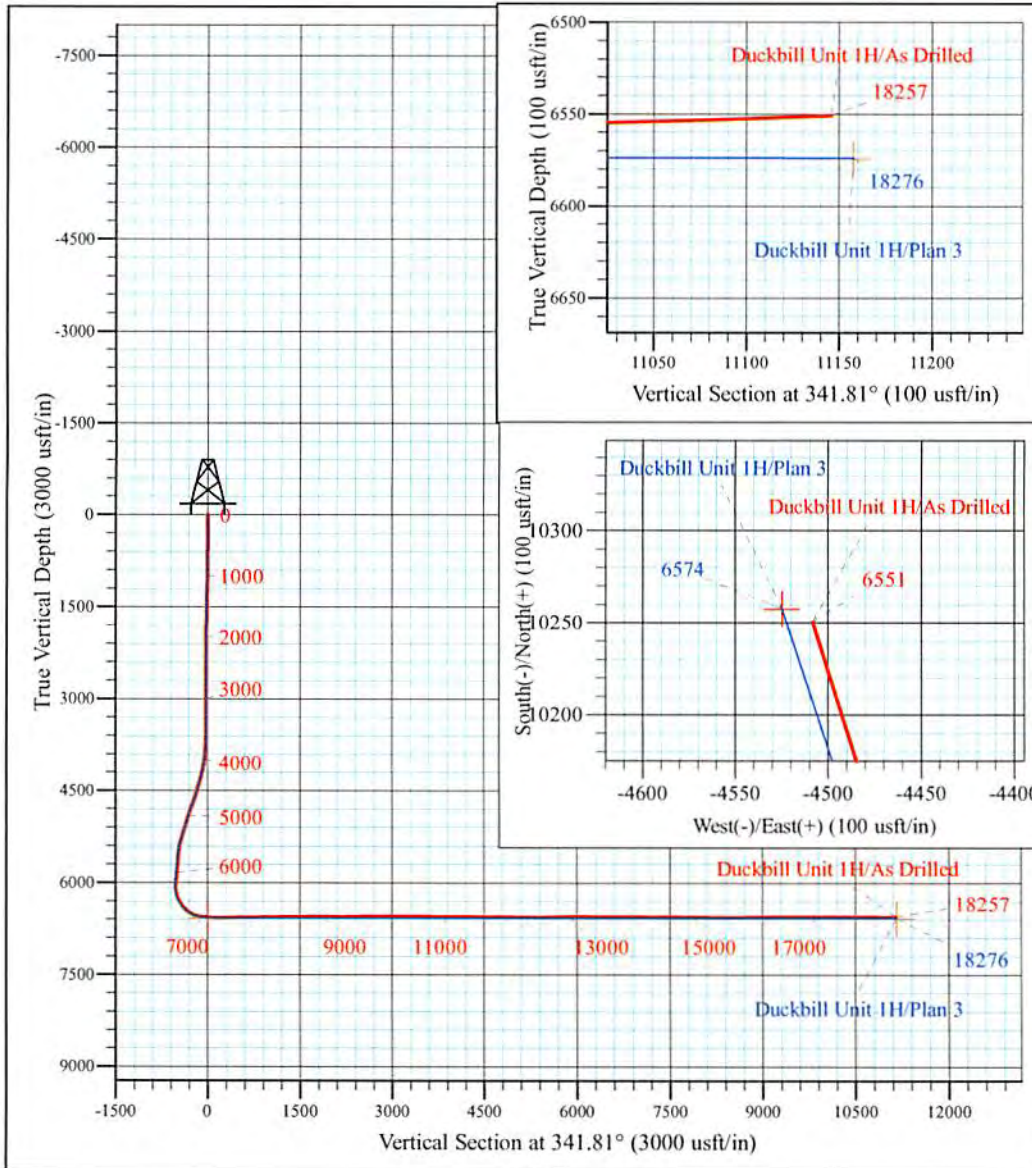
Vogt: Seaborn/Violet/Tulip/Marks
 Duckbill Unit 1H
 Plan 3
 PD 525: 1112' GL + 19' KB @ 1131.0usft
 Doddridge County WV

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: **Duckbill Unit 1H SHL**

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	14262927.96	1679340.73	39° 16' 38.250 N	80° 51' 44.832 W



WV Department of Environmental Protection

Duckbill Unit 1H
Approx. BHL
 39° 18' 19.669 N 80° 52' 42.009W

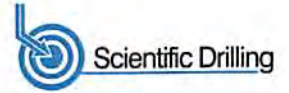
Shane Rhodes
 12:59, June 29 2016
 Scientific Drilling International
 124 Vista Drive
 Charleroi, PA 15022

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Survey Report - Geographic



Company:	Antero Resources	Local Co-ordinate Reference:	Well Duckbill Unit 1H
Project:	Doddridge County WV	TVD Reference:	PD 525: 1112' GL + 19' KB @ 1131.0usft
Site:	Vogt: Seaborn/Violet/Tulip/Marks	MD Reference:	PD 525: 1112' GL + 19' KB @ 1131.0usft
Well:	Duckbill Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

Project	Doddridge County WV, McClellan District		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Zone 17N (84 W to 78 W)		

Site	Vogt: Seaborn/Violet/Tulip/Marks, Site: Seaborn 2H				
Site Position:		Northing:	14,262,941.51 usft	Latitude:	39° 16' 38.384 N
From:	Map	Easting:	1,679,373.00 usft	Longitude:	80° 51' 44.422 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.09 °

Well	Duckbill Unit 1H, Marcellus					
Well Position	+N/-S	0.0 usft	Northing:	14,262,927.96 usft	Latitude:	39° 16' 38.250 N
	+E/-W	0.0 usft	Easting:	1,679,340.73 usft	Longitude:	80° 51' 44.832 W
Position Uncertainty		2.0 usft	Wellhead Elevation:	1,125.0 usft	Ground Level:	1,112.0 usft

Wellbore	Original Wellpath				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2016	5/4/2016	-8.57	66.62	52,093
	BGGM2016	6/16/2016	-8.58	66.61	52,081

Design	As Drilled				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	341.81	

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Survey Program	Date	6/29/2016			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	5,200.0	Survey #5 - Final Def Gyro (Original Wellp	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4	
5,279.0	18,257.0	Survey #6 SDI MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1	

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	14,262,927.96	1,679,340.73	39° 16' 38.250 N	80° 51' 44.832 W
100.0	0.40	278.75	100.0	0.1	-0.3	14,262,928.02	1,679,340.39	39° 16' 38.251 N	80° 51' 44.837 W
125.0	0.39	271.70	125.0	0.1	-0.5	14,262,928.03	1,679,340.21	39° 16' 38.251 N	80° 51' 44.839 W
150.0	0.34	276.19	150.0	0.1	-0.7	14,262,928.04	1,679,340.06	39° 16' 38.251 N	80° 51' 44.841 W
175.0	0.28	269.83	175.0	0.1	-0.8	14,262,928.05	1,679,339.92	39° 16' 38.251 N	80° 51' 44.843 W
200.0	0.25	264.98	200.0	0.1	-0.9	14,262,928.05	1,679,339.81	39° 16' 38.251 N	80° 51' 44.844 W
225.0	0.27	261.55	225.0	0.1	-1.0	14,262,928.03	1,679,339.69	39° 16' 38.251 N	80° 51' 44.846 W
250.0	0.29	253.85	250.0	0.0	-1.2	14,262,928.01	1,679,339.57	39° 16' 38.251 N	80° 51' 44.847 W
275.0	0.32	251.01	275.0	0.0	-1.3	14,262,927.97	1,679,339.45	39° 16' 38.250 N	80° 51' 44.849 W
300.0	0.40	241.88	300.0	-0.1	-1.4	14,262,927.90	1,679,339.30	39° 16' 38.250 N	80° 51' 44.850 W



Scientific Drilling International

Survey Report - Geographic



Company:	Antero Resources	Local Co-ordinate Reference:	Well Duckbill Unit 1H
Project:	Doddridge County WV	TVD Reference:	PD 525: 1112' GL + 19' KB @ 1131.0usft
Site:	Vogt: Seaborn/Violet/Tulip/Marks	MD Reference:	PD 525: 1112' GL + 19' KB @ 1131.0usft
Well:	Duckbill Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

OCT 03 2017

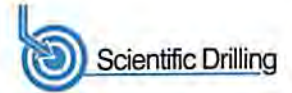
WV Department of Environmental Protection

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
325.0	0.41	245.26	325.0	-0.1	-1.6	14,262,927.82	1,679,339.15	39° 16' 38.249 N	80° 51' 44.852 W
350.0	0.44	243.50	350.0	-0.2	-1.8	14,262,927.74	1,679,338.98	39° 16' 38.248 N	80° 51' 44.855 W
375.0	0.48	242.07	375.0	-0.3	-1.9	14,262,927.65	1,679,338.80	39° 16' 38.247 N	80° 51' 44.857 W
400.0	0.54	250.76	400.0	-0.4	-2.1	14,262,927.56	1,679,338.60	39° 16' 38.246 N	80° 51' 44.859 W
425.0	0.64	255.47	425.0	-0.5	-2.4	14,262,927.49	1,679,338.35	39° 16' 38.246 N	80° 51' 44.863 W
450.0	0.67	258.93	450.0	-0.5	-2.7	14,262,927.43	1,679,338.07	39° 16' 38.245 N	80° 51' 44.866 W
475.0	1.15	250.47	475.0	-0.6	-3.0	14,262,927.31	1,679,337.69	39° 16' 38.244 N	80° 51' 44.871 W
500.0	1.51	248.06	500.0	-0.9	-3.6	14,262,927.11	1,679,337.15	39° 16' 38.242 N	80° 51' 44.878 W
525.0	1.69	246.12	525.0	-1.1	-4.2	14,262,926.84	1,679,336.51	39° 16' 38.239 N	80° 51' 44.886 W
550.0	1.96	246.02	550.0	-1.5	-5.0	14,262,926.51	1,679,335.78	39° 16' 38.236 N	80° 51' 44.895 W
575.0	2.07	245.38	574.9	-1.8	-5.8	14,262,926.15	1,679,334.98	39° 16' 38.233 N	80° 51' 44.906 W
600.0	2.35	244.70	599.9	-2.2	-6.6	14,262,925.74	1,679,334.10	39° 16' 38.229 N	80° 51' 44.917 W
625.0	2.57	244.31	624.9	-2.7	-7.6	14,262,925.28	1,679,333.14	39° 16' 38.224 N	80° 51' 44.929 W
650.0	2.70	242.79	649.9	-3.2	-8.6	14,262,924.77	1,679,332.11	39° 16' 38.219 N	80° 51' 44.942 W
675.0	3.02	242.50	674.8	-3.8	-9.7	14,262,924.20	1,679,331.00	39° 16' 38.213 N	80° 51' 44.956 W
700.0	3.25	241.30	699.8	-4.4	-10.9	14,262,923.55	1,679,329.79	39° 16' 38.207 N	80° 51' 44.972 W
725.0	3.62	240.36	724.8	-5.1	-12.2	14,262,922.82	1,679,328.49	39° 16' 38.200 N	80° 51' 44.988 W
750.0	3.93	239.75	749.7	-6.0	-13.7	14,262,922.00	1,679,327.06	39° 16' 38.192 N	80° 51' 45.006 W
775.0	4.17	238.76	774.6	-6.9	-15.2	14,262,921.10	1,679,325.54	39° 16' 38.183 N	80° 51' 45.026 W
800.0	4.30	238.70	799.6	-7.8	-16.8	14,262,920.14	1,679,323.96	39° 16' 38.173 N	80° 51' 45.046 W
825.0	4.41	238.43	824.5	-8.8	-18.4	14,262,919.15	1,679,322.34	39° 16' 38.163 N	80° 51' 45.066 W
850.0	4.48	238.35	849.4	-9.8	-20.0	14,262,918.13	1,679,320.69	39° 16' 38.153 N	80° 51' 45.087 W
875.0	4.49	238.35	874.4	-10.9	-21.7	14,262,917.11	1,679,319.03	39° 16' 38.143 N	80° 51' 45.109 W
900.0	4.57	238.68	899.3	-11.9	-23.4	14,262,916.08	1,679,317.35	39° 16' 38.133 N	80° 51' 45.130 W
925.0	4.67	239.40	924.2	-12.9	-25.1	14,262,915.04	1,679,315.62	39° 16' 38.123 N	80° 51' 45.152 W
950.0	4.65	240.59	949.1	-13.9	-26.9	14,262,914.02	1,679,313.86	39° 16' 38.113 N	80° 51' 45.174 W
975.0	4.63	241.15	974.0	-14.9	-28.6	14,262,913.04	1,679,312.09	39° 16' 38.103 N	80° 51' 45.197 W
1,000.0	4.59	241.32	998.9	-15.9	-30.4	14,262,912.07	1,679,310.33	39° 16' 38.094 N	80° 51' 45.219 W
1,025.0	4.66	242.21	1,023.9	-16.8	-32.2	14,262,911.12	1,679,308.56	39° 16' 38.084 N	80° 51' 45.242 W
1,050.0	4.72	242.49	1,048.8	-17.8	-34.0	14,262,910.17	1,679,306.75	39° 16' 38.075 N	80° 51' 45.265 W
1,075.0	4.68	242.13	1,073.7	-18.7	-35.8	14,262,909.22	1,679,304.93	39° 16' 38.066 N	80° 51' 45.288 W
1,100.0	4.75	241.82	1,098.6	-19.7	-37.6	14,262,908.25	1,679,303.12	39° 16' 38.056 N	80° 51' 45.311 W
1,125.0	4.83	241.27	1,123.5	-20.7	-39.4	14,262,907.26	1,679,301.28	39° 16' 38.046 N	80° 51' 45.335 W
1,150.0	4.87	241.30	1,148.4	-21.7	-41.3	14,262,906.24	1,679,299.43	39° 16' 38.036 N	80° 51' 45.358 W
1,175.0	4.86	241.46	1,173.3	-22.7	-43.2	14,262,905.23	1,679,297.57	39° 16' 38.026 N	80° 51' 45.382 W
1,200.0	4.94	241.47	1,198.3	-23.8	-45.0	14,262,904.21	1,679,295.69	39° 16' 38.016 N	80° 51' 45.406 W
1,225.0	4.99	241.27	1,223.2	-24.8	-46.9	14,262,903.17	1,679,293.79	39° 16' 38.006 N	80° 51' 45.430 W
1,250.0	4.98	241.62	1,248.1	-25.8	-48.8	14,262,902.13	1,679,291.89	39° 16' 37.996 N	80° 51' 45.454 W
1,275.0	4.84	242.80	1,273.0	-26.8	-50.7	14,262,901.13	1,679,289.99	39° 16' 37.986 N	80° 51' 45.478 W
1,300.0	4.78	242.49	1,297.9	-27.8	-52.6	14,262,900.17	1,679,288.13	39° 16' 37.976 N	80° 51' 45.502 W
1,325.0	4.79	242.79	1,322.8	-28.8	-54.5	14,262,899.21	1,679,286.28	39° 16' 37.967 N	80° 51' 45.526 W
1,350.0	4.87	243.00	1,347.7	-29.7	-56.3	14,262,898.25	1,679,284.40	39° 16' 37.957 N	80° 51' 45.549 W
1,375.0	4.87	242.46	1,372.6	-30.7	-58.2	14,262,897.28	1,679,282.52	39° 16' 37.948 N	80° 51' 45.573 W
1,400.0	4.59	242.11	1,397.5	-31.6	-60.0	14,262,896.32	1,679,280.69	39° 16' 37.938 N	80° 51' 45.597 W
1,425.0	4.11	240.92	1,422.5	-32.5	-61.7	14,262,895.42	1,679,279.03	39° 16' 37.930 N	80° 51' 45.618 W
1,450.0	3.86	240.46	1,447.4	-33.4	-63.2	14,262,894.57	1,679,277.51	39° 16' 37.921 N	80° 51' 45.637 W
1,475.0	3.29	237.75	1,472.4	-34.2	-64.6	14,262,893.77	1,679,276.17	39° 16' 37.913 N	80° 51' 45.654 W
1,500.0	2.89	236.70	1,497.3	-34.9	-65.7	14,262,893.04	1,679,275.04	39° 16' 37.906 N	80° 51' 45.669 W
1,525.0	2.56	232.86	1,522.3	-35.6	-66.7	14,262,892.36	1,679,274.07	39° 16' 37.899 N	80° 51' 45.681 W
1,550.0	2.32	228.63	1,547.3	-36.3	-67.5	14,262,891.69	1,679,273.24	39° 16' 37.893 N	80° 51' 45.692 W
1,575.0	2.33	226.70	1,572.2	-37.0	-68.2	14,262,891.00	1,679,272.49	39° 16' 37.886 N	80° 51' 45.701 W
1,600.0	2.40	225.55	1,597.2	-37.7	-69.0	14,262,890.29	1,679,271.75	39° 16' 37.879 N	80° 51' 45.711 W
1,625.0	2.44	223.97	1,622.2	-38.4	-69.7	14,262,889.54	1,679,271.01	39° 16' 37.871 N	80° 51' 45.720 W
1,650.0	2.40	224.16	1,647.2	-39.2	-70.5	14,262,888.78	1,679,270.27	39° 16' 37.864 N	80° 51' 45.729 W
1,675.0	2.56	223.34	1,672.2	-40.0	-71.2	14,262,888.00	1,679,269.52	39° 16' 37.856 N	80° 51' 45.739 W



Scientific Drilling International

Survey Report - Geographic



Company: Antero Resources
Project: Doddridge County WV
Site: Vogt; Seaborn/Violet/Tulip/Marks
Well: Duckbill Unit 1H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Duckbill Unit 1H
TVD Reference: PD 525: 1112' GL + 19' KB @ 1131.0usft
MD Reference: PD 525: 1112' GL + 19' KB @ 1131.0usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Antero NE

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OCT 03 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
1,700.0	2.70	223.98	1,697.1	-40.8	-72.0	14,262,887.17	1,679,266.73	39° 16' 37.848 N	80° 51' 45.749 W
1,725.0	2.86	224.30	1,722.1	-41.7	-72.8	14,262,886.30	1,679,267.89	39° 16' 37.840 N	80° 51' 45.760 W
1,750.0	3.02	223.31	1,747.1	-42.6	-73.7	14,262,885.37	1,679,267.00	39° 16' 37.830 N	80° 51' 45.771 W
1,775.0	3.11	227.43	1,772.0	-43.5	-74.7	14,262,884.44	1,679,266.05	39° 16' 37.821 N	80° 51' 45.783 W
1,800.0	3.32	235.56	1,797.0	-44.4	-75.8	14,262,883.57	1,679,264.95	39° 16' 37.813 N	80° 51' 45.797 W
1,825.0	3.57	239.68	1,821.9	-45.2	-77.0	14,262,882.77	1,679,263.68	39° 16' 37.805 N	80° 51' 45.813 W
1,850.0	3.58	244.02	1,846.9	-45.9	-78.4	14,262,882.03	1,679,262.31	39° 16' 37.797 N	80° 51' 45.831 W
1,875.0	3.62	246.71	1,871.8	-46.6	-79.8	14,262,881.38	1,679,260.88	39° 16' 37.791 N	80° 51' 45.849 W
1,900.0	3.69	247.65	1,896.8	-47.2	-81.3	14,262,880.76	1,679,259.41	39° 16' 37.785 N	80° 51' 45.868 W
1,925.0	3.69	248.23	1,921.7	-47.8	-82.8	14,262,880.15	1,679,257.92	39° 16' 37.779 N	80° 51' 45.887 W
1,950.0	3.75	248.06	1,946.7	-48.4	-84.3	14,262,879.55	1,679,256.42	39° 16' 37.773 N	80° 51' 45.906 W
1,975.0	3.93	248.64	1,971.6	-49.0	-85.9	14,262,878.93	1,679,254.86	39° 16' 37.767 N	80° 51' 45.926 W
2,000.0	4.06	248.59	1,996.6	-49.7	-87.5	14,262,878.30	1,679,253.24	39° 16' 37.761 N	80° 51' 45.946 W
2,025.0	4.14	248.71	2,021.5	-50.3	-89.2	14,262,877.65	1,679,251.57	39° 16' 37.754 N	80° 51' 45.967 W
2,050.0	4.19	248.37	2,046.4	-51.0	-90.8	14,262,876.98	1,679,249.89	39° 16' 37.748 N	80° 51' 45.989 W
2,075.0	4.28	247.78	2,071.4	-51.7	-92.6	14,262,876.29	1,679,248.17	39° 16' 37.741 N	80° 51' 46.011 W
2,100.0	4.29	248.53	2,096.3	-52.4	-94.3	14,262,875.60	1,679,246.44	39° 16' 37.734 N	80° 51' 46.033 W
2,125.0	4.33	249.98	2,121.2	-53.0	-96.0	14,262,874.93	1,679,244.68	39° 16' 37.727 N	80° 51' 46.055 W
2,150.0	4.46	250.56	2,146.2	-53.7	-97.9	14,262,874.29	1,679,242.88	39° 16' 37.721 N	80° 51' 46.078 W
2,175.0	4.39	250.12	2,171.1	-54.3	-99.7	14,262,873.64	1,679,241.06	39° 16' 37.715 N	80° 51' 46.101 W
2,200.0	4.14	249.80	2,196.0	-55.0	-101.4	14,262,873.00	1,679,239.32	39° 16' 37.708 N	80° 51' 46.124 W
2,225.0	3.58	249.27	2,221.0	-55.6	-103.0	14,262,872.41	1,679,237.74	39° 16' 37.703 N	80° 51' 46.144 W
2,250.0	3.03	247.72	2,245.9	-56.1	-104.3	14,262,871.89	1,679,236.40	39° 16' 37.697 N	80° 51' 46.161 W
2,275.0	2.58	245.93	2,270.9	-56.6	-105.5	14,262,871.41	1,679,235.27	39° 16' 37.693 N	80° 51' 46.175 W
2,300.0	1.98	242.92	2,295.9	-57.0	-106.4	14,262,870.98	1,679,234.37	39° 16' 37.689 N	80° 51' 46.186 W
2,325.0	1.48	245.14	2,320.9	-57.3	-107.0	14,262,870.65	1,679,233.70	39° 16' 37.685 N	80° 51' 46.195 W
2,350.0	1.03	244.53	2,345.9	-57.5	-107.5	14,262,870.42	1,679,233.20	39° 16' 37.683 N	80° 51' 46.201 W
2,375.0	0.51	241.85	2,370.9	-57.7	-107.8	14,262,870.27	1,679,232.90	39° 16' 37.681 N	80° 51' 46.205 W
2,400.0	0.22	198.07	2,395.9	-57.8	-107.9	14,262,870.17	1,679,232.79	39° 16' 37.681 N	80° 51' 46.207 W
2,425.0	0.37	113.11	2,420.9	-57.9	-107.9	14,262,870.09	1,679,232.85	39° 16' 37.680 N	80° 51' 46.206 W
2,450.0	0.48	108.61	2,445.9	-57.9	-107.7	14,262,870.02	1,679,233.02	39° 16' 37.679 N	80° 51' 46.204 W
2,475.0	0.61	99.21	2,470.9	-58.0	-107.5	14,262,869.97	1,679,233.25	39° 16' 37.679 N	80° 51' 46.201 W
2,500.0	0.70	93.40	2,495.8	-58.0	-107.2	14,262,869.94	1,679,233.53	39° 16' 37.678 N	80° 51' 46.197 W
2,525.0	0.68	94.40	2,520.8	-58.0	-106.9	14,262,869.92	1,679,233.83	39° 16' 37.678 N	80° 51' 46.193 W
2,550.0	0.68	96.40	2,545.8	-58.1	-106.6	14,262,869.89	1,679,234.13	39° 16' 37.678 N	80° 51' 46.190 W
2,575.0	0.70	90.08	2,570.8	-58.1	-106.3	14,262,869.87	1,679,234.43	39° 16' 37.678 N	80° 51' 46.186 W
2,600.0	0.58	100.54	2,595.8	-58.1	-106.0	14,262,869.85	1,679,234.71	39° 16' 37.677 N	80° 51' 46.182 W
2,625.0	0.68	86.23	2,620.8	-58.1	-105.8	14,262,869.84	1,679,234.98	39° 16' 37.677 N	80° 51' 46.179 W
2,650.0	0.62	89.91	2,645.8	-58.1	-105.5	14,262,869.85	1,679,235.26	39° 16' 37.677 N	80° 51' 46.175 W
2,675.0	0.57	81.07	2,670.8	-58.1	-105.2	14,262,869.87	1,679,235.52	39° 16' 37.678 N	80° 51' 46.172 W
2,700.0	0.64	74.97	2,695.8	-58.0	-105.0	14,262,869.92	1,679,235.78	39° 16' 37.678 N	80° 51' 46.169 W
2,725.0	0.61	72.47	2,720.8	-58.0	-104.7	14,262,870.00	1,679,236.04	39° 16' 37.679 N	80° 51' 46.165 W
2,750.0	0.56	61.76	2,745.8	-57.9	-104.5	14,262,870.10	1,679,236.27	39° 16' 37.680 N	80° 51' 46.162 W
2,775.0	0.60	55.40	2,770.8	-57.7	-104.2	14,262,870.23	1,679,236.49	39° 16' 37.681 N	80° 51' 46.160 W
2,800.0	0.73	47.70	2,795.8	-57.6	-104.0	14,262,870.41	1,679,236.72	39° 16' 37.683 N	80° 51' 46.157 W
2,825.0	0.59	50.96	2,820.8	-57.4	-103.8	14,262,870.60	1,679,236.93	39° 16' 37.685 N	80° 51' 46.154 W
2,850.0	0.60	41.23	2,845.8	-57.2	-103.6	14,262,870.78	1,679,237.12	39° 16' 37.687 N	80° 51' 46.152 W
2,875.0	0.58	47.16	2,870.8	-57.0	-103.4	14,262,870.96	1,679,237.30	39° 16' 37.688 N	80° 51' 46.149 W
2,900.0	0.54	29.76	2,895.8	-56.8	-103.3	14,262,871.15	1,679,237.45	39° 16' 37.690 N	80° 51' 46.147 W
2,925.0	0.58	16.22	2,920.8	-56.6	-103.2	14,262,871.38	1,679,237.54	39° 16' 37.692 N	80° 51' 46.146 W
2,950.0	0.40	336.26	2,945.8	-56.4	-103.2	14,262,871.58	1,679,237.54	39° 16' 37.694 N	80° 51' 46.146 W
2,975.0	0.57	320.51	2,970.8	-56.2	-103.3	14,262,871.75	1,679,237.43	39° 16' 37.696 N	80° 51' 46.148 W
3,000.0	0.60	317.05	2,995.8	-56.0	-103.5	14,262,871.94	1,679,237.26	39° 16' 37.698 N	80° 51' 46.150 W
3,025.0	0.75	293.99	3,020.8	-55.9	-103.7	14,262,872.11	1,679,237.02	39° 16' 37.700 N	80° 51' 46.153 W
3,050.0	1.16	271.59	3,045.8	-55.8	-104.1	14,262,872.18	1,679,236.62	39° 16' 37.700 N	80° 51' 46.158 W



Scientific Drilling International
Survey Report - Geographic



Company: Antero Resources
Project: Doddridge County WV
Site: Vogt: Seaborn/Violet/Tulip/Marks
Well: Duckbill Unit 1H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Duckbill Unit 1H
TVD Reference: PD 525: 1112' GL + 19' KB @ 1131.0ust
MD Reference: PD 525: 1112' GL + 19' KB @ 1131.0ust
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Antero NE

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Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
3,075.0	1.47	262.12	3,070.8	-55.8	-104.7	14,262,872.14	1,679,236.05	39° 16' 37.700 N	80° 51' 46.165 W
3,100.0	1.57	258.96	3,095.8	-55.9	-105.3	14,262,872.03	1,679,235.40	39° 16' 37.699 N	80° 51' 46.173 W
3,125.0	1.55	248.20	3,120.8	-56.1	-106.0	14,262,871.84	1,679,234.75	39° 16' 37.697 N	80° 51' 46.182 W
3,150.0	1.52	234.20	3,145.8	-56.4	-106.6	14,262,871.52	1,679,234.16	39° 16' 37.694 N	80° 51' 46.189 W
3,175.0	1.44	236.99	3,170.8	-56.8	-107.1	14,262,871.16	1,679,233.63	39° 16' 37.690 N	80° 51' 46.196 W
3,200.0	1.25	236.02	3,195.8	-57.1	-107.6	14,262,870.83	1,679,233.14	39° 16' 37.687 N	80° 51' 46.202 W
3,225.0	1.18	234.16	3,220.8	-57.4	-108.0	14,262,870.53	1,679,232.71	39° 16' 37.684 N	80° 51' 46.208 W
3,250.0	1.03	236.96	3,245.8	-57.7	-108.4	14,262,870.26	1,679,232.31	39° 16' 37.681 N	80° 51' 46.213 W
3,275.0	0.99	237.37	3,270.8	-57.9	-108.8	14,262,870.02	1,679,231.94	39° 16' 37.679 N	80° 51' 46.217 W
3,300.0	1.06	227.52	3,295.7	-58.2	-109.1	14,262,869.75	1,679,231.59	39° 16' 37.676 N	80° 51' 46.222 W
3,325.0	1.09	231.07	3,320.7	-58.5	-109.5	14,262,869.44	1,679,231.23	39° 16' 37.673 N	80° 51' 46.226 W
3,350.0	0.98	229.45	3,345.7	-58.8	-109.8	14,262,869.15	1,679,230.88	39° 16' 37.671 N	80° 51' 46.231 W
3,375.0	1.06	229.96	3,370.7	-59.1	-110.2	14,262,868.86	1,679,230.54	39° 16' 37.668 N	80° 51' 46.235 W
3,400.0	1.00	231.20	3,395.7	-59.4	-110.5	14,262,868.58	1,679,230.20	39° 16' 37.665 N	80° 51' 46.240 W
3,425.0	1.03	233.80	3,420.7	-59.7	-110.9	14,262,868.31	1,679,229.85	39° 16' 37.662 N	80° 51' 46.244 W
3,450.0	0.99	235.44	3,445.7	-59.9	-111.2	14,262,868.05	1,679,229.49	39° 16' 37.660 N	80° 51' 46.249 W
3,475.0	1.02	236.09	3,470.7	-60.2	-111.6	14,262,867.81	1,679,229.12	39° 16' 37.657 N	80° 51' 46.253 W
3,500.0	1.07	235.62	3,495.7	-60.4	-112.0	14,262,867.55	1,679,228.75	39° 16' 37.655 N	80° 51' 46.258 W
3,525.0	0.99	236.63	3,520.7	-60.7	-112.4	14,262,867.30	1,679,228.37	39° 16' 37.652 N	80° 51' 46.263 W
3,550.0	1.20	235.85	3,545.7	-60.9	-112.8	14,262,867.04	1,679,227.98	39° 16' 37.650 N	80° 51' 46.268 W
3,575.0	1.79	234.55	3,570.7	-61.3	-113.3	14,262,866.66	1,679,227.44	39° 16' 37.646 N	80° 51' 46.275 W
3,600.0	2.68	234.53	3,595.7	-61.9	-114.1	14,262,866.10	1,679,226.65	39° 16' 37.640 N	80° 51' 46.285 W
3,625.0	3.10	232.15	3,620.6	-62.6	-115.1	14,262,865.34	1,679,225.64	39° 16' 37.633 N	80° 51' 46.298 W
3,650.0	3.44	230.33	3,645.6	-63.5	-116.2	14,262,864.45	1,679,224.53	39° 16' 37.624 N	80° 51' 46.312 W
3,675.0	4.49	225.08	3,670.5	-64.7	-117.5	14,262,863.28	1,679,223.26	39° 16' 37.613 N	80° 51' 46.328 W
3,700.0	5.09	222.58	3,695.5	-66.2	-118.9	14,262,861.77	1,679,221.81	39° 16' 37.598 N	80° 51' 46.346 W
3,725.0	5.34	219.40	3,720.4	-67.9	-120.4	14,262,860.06	1,679,220.32	39° 16' 37.581 N	80° 51' 46.365 W
3,750.0	5.76	220.05	3,745.2	-69.8	-122.0	14,262,858.20	1,679,218.78	39° 16' 37.562 N	80° 51' 46.385 W
3,775.0	6.65	216.74	3,770.1	-71.9	-123.6	14,262,856.08	1,679,217.11	39° 16' 37.541 N	80° 51' 46.406 W
3,800.0	7.24	215.51	3,794.9	-74.3	-125.4	14,262,853.63	1,679,215.32	39° 16' 37.517 N	80° 51' 46.429 W
3,825.0	7.53	215.01	3,819.7	-77.0	-127.3	14,262,851.01	1,679,213.47	39° 16' 37.491 N	80° 51' 46.453 W
3,850.0	8.03	211.51	3,844.5	-79.8	-129.1	14,262,848.18	1,679,211.62	39° 16' 37.463 N	80° 51' 46.476 W
3,875.0	9.07	209.02	3,869.2	-83.0	-131.0	14,262,844.97	1,679,209.75	39° 16' 37.432 N	80° 51' 46.500 W
3,900.0	9.11	208.56	3,893.9	-86.5	-132.9	14,262,841.51	1,679,207.85	39° 16' 37.398 N	80° 51' 46.524 W
3,925.0	9.50	208.49	3,918.6	-90.0	-134.8	14,262,837.95	1,679,205.92	39° 16' 37.362 N	80° 51' 46.549 W
3,950.0	10.35	209.18	3,943.2	-93.8	-136.9	14,262,834.18	1,679,203.84	39° 16' 37.325 N	80° 51' 46.576 W
3,975.0	10.57	209.87	3,967.8	-97.7	-139.1	14,262,830.23	1,679,201.60	39° 16' 37.286 N	80° 51' 46.604 W
4,000.0	10.79	210.49	3,992.3	-101.7	-141.5	14,262,826.23	1,679,199.27	39° 16' 37.247 N	80° 51' 46.634 W
4,025.0	11.20	211.78	4,016.9	-105.8	-143.9	14,262,822.15	1,679,196.81	39° 16' 37.206 N	80° 51' 46.665 W
4,050.0	12.15	214.39	4,041.4	-110.1	-146.7	14,262,817.91	1,679,194.04	39° 16' 37.164 N	80° 51' 46.701 W
4,075.0	13.48	215.78	4,065.7	-114.6	-149.9	14,262,813.38	1,679,190.85	39° 16' 37.120 N	80° 51' 46.741 W
4,100.0	14.76	214.20	4,090.0	-119.6	-153.4	14,262,808.38	1,679,187.36	39° 16' 37.070 N	80° 51' 46.786 W
4,125.0	15.93	213.41	4,114.1	-125.1	-157.1	14,262,802.88	1,679,183.68	39° 16' 37.016 N	80° 51' 46.833 W
4,150.0	16.80	211.68	4,138.1	-131.0	-160.8	14,262,796.94	1,679,179.89	39° 16' 36.957 N	80° 51' 46.881 W
4,175.0	17.27	210.60	4,162.0	-137.3	-164.6	14,262,790.67	1,679,176.10	39° 16' 36.895 N	80° 51' 46.929 W
4,200.0	17.80	209.22	4,185.8	-143.8	-168.4	14,262,784.14	1,679,172.35	39° 16' 36.831 N	80° 51' 46.977 W
4,225.0	18.64	208.12	4,209.6	-150.7	-172.1	14,262,777.28	1,679,168.60	39° 16' 36.763 N	80° 51' 47.025 W
4,250.0	19.58	206.82	4,233.2	-157.9	-175.9	14,262,770.02	1,679,164.83	39° 16' 36.691 N	80° 51' 47.073 W
4,275.0	19.94	207.17	4,256.7	-165.5	-179.7	14,262,762.49	1,679,160.99	39° 16' 36.617 N	80° 51' 47.122 W
4,300.0	20.62	207.01	4,280.2	-173.2	-183.7	14,262,754.78	1,679,157.05	39° 16' 36.541 N	80° 51' 47.172 W
4,325.0	21.61	207.38	4,303.5	-181.2	-187.8	14,262,746.77	1,679,152.93	39° 16' 36.462 N	80° 51' 47.225 W
4,350.0	22.19	207.46	4,326.7	-189.5	-192.1	14,262,738.49	1,679,148.64	39° 16' 36.380 N	80° 51' 47.280 W
4,375.0	22.98	207.27	4,349.8	-198.0	-196.5	14,262,729.96	1,679,144.22	39° 16' 36.296 N	80° 51' 47.336 W
4,400.0	23.55	208.68	4,372.7	-206.7	-201.1	14,262,721.24	1,679,139.59	39° 16' 36.209 N	80° 51' 47.395 W
4,425.0	24.14	209.82	4,395.6	-215.5	-206.1	14,262,712.43	1,679,134.65	39° 16' 36.122 N	80° 51' 47.458 W



Scientific Drilling International
Survey Report - Geographic



Company:	Antero Resources	Local Co-ordinate Reference:	Well Duckbill Unit 1H
Project:	Doddridge County WV	TVD Reference:	PD 525: 1112' GL + 19' KB @ 1131.0usft
Site:	Vogt: Seaborn/Violet/Tulip/Marks	MD Reference:	PD 525: 1112' GL + 19' KB @ 1131.0usft
Well:	Duckbill Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

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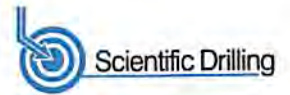
Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,450.0	24.84	210.84	4,418.3	-224.5	-211.3	14,262,703.48	1,679,129.42	39° 16' 36.034 N	80° 51' 47.525 W
4,475.0	25.36	211.55	4,441.0	-233.6	-216.8	14,262,694.41	1,679,123.92	39° 16' 35.944 N	80° 51' 47.595 W
4,500.0	25.85	211.84	4,463.5	-242.7	-222.5	14,262,685.22	1,679,118.25	39° 16' 35.854 N	80° 51' 47.667 W
4,525.0	25.34	211.96	4,486.1	-251.9	-228.2	14,262,676.05	1,679,112.54	39° 16' 35.763 N	80° 51' 47.740 W
4,550.0	25.04	212.16	4,508.7	-260.9	-233.8	14,262,667.03	1,679,106.89	39° 16' 35.674 N	80° 51' 47.812 W
4,575.0	25.30	212.00	4,531.3	-269.9	-239.5	14,262,658.02	1,679,101.24	39° 16' 35.585 N	80° 51' 47.884 W
4,600.0	24.98	211.77	4,554.0	-279.0	-245.1	14,262,649.00	1,679,095.63	39° 16' 35.496 N	80° 51' 47.956 W
4,625.0	25.44	211.29	4,576.6	-288.0	-250.7	14,262,639.93	1,679,090.07	39° 16' 35.406 N	80° 51' 48.027 W
4,650.0	26.03	210.83	4,599.1	-297.3	-256.3	14,262,630.63	1,679,084.47	39° 16' 35.314 N	80° 51' 48.098 W
4,675.0	27.00	209.90	4,621.5	-307.0	-261.9	14,262,621.00	1,679,078.83	39° 16' 35.219 N	80° 51' 48.170 W
4,700.0	27.94	209.24	4,643.6	-317.0	-267.6	14,262,610.97	1,679,073.14	39° 16' 35.120 N	80° 51' 48.243 W
4,725.0	28.52	208.63	4,665.7	-327.3	-273.3	14,262,600.62	1,679,067.41	39° 16' 35.018 N	80° 51' 48.316 W
4,750.0	29.10	208.07	4,687.6	-337.9	-279.0	14,262,590.02	1,679,061.69	39° 16' 34.913 N	80° 51' 48.389 W
4,775.0	29.16	207.04	4,709.4	-348.7	-284.7	14,262,579.23	1,679,056.06	39° 16' 34.806 N	80° 51' 48.460 W
4,800.0	28.32	205.64	4,731.3	-359.5	-290.0	14,262,568.46	1,679,050.73	39° 16' 34.700 N	80° 51' 48.528 W
4,825.0	28.07	204.46	4,753.4	-370.2	-295.0	14,262,557.76	1,679,045.73	39° 16' 34.594 N	80° 51' 48.592 W
4,850.0	26.92	203.42	4,775.5	-380.8	-299.7	14,262,547.21	1,679,041.04	39° 16' 34.490 N	80° 51' 48.652 W
4,875.0	26.60	202.29	4,797.9	-391.1	-304.1	14,262,536.84	1,679,036.67	39° 16' 34.388 N	80° 51' 48.708 W
4,900.0	25.69	201.33	4,820.3	-401.4	-308.2	14,262,526.61	1,679,032.58	39° 16' 34.287 N	80° 51' 48.760 W
4,925.0	25.74	202.45	4,842.8	-411.4	-312.2	14,262,516.55	1,679,028.53	39° 16' 34.187 N	80° 51' 48.812 W
4,950.0	25.45	204.94	4,865.4	-421.3	-316.5	14,262,506.66	1,679,024.19	39° 16' 34.089 N	80° 51' 48.867 W
4,975.0	25.30	205.49	4,888.0	-431.0	-321.1	14,262,496.96	1,679,019.63	39° 16' 33.994 N	80° 51' 48.925 W
5,000.0	24.37	207.24	4,910.7	-440.4	-325.8	14,262,487.56	1,679,014.97	39° 16' 33.901 N	80° 51' 48.985 W
5,025.0	23.78	210.09	4,933.5	-449.4	-330.6	14,262,478.61	1,679,010.08	39° 16' 33.812 N	80° 51' 49.047 W
5,050.0	23.98	211.81	4,956.3	-458.0	-335.9	14,262,469.93	1,679,004.88	39° 16' 33.727 N	80° 51' 49.114 W
5,075.0	24.55	211.71	4,979.1	-466.8	-341.3	14,262,461.20	1,678,999.47	39° 16' 33.640 N	80° 51' 49.183 W
5,100.0	24.72	212.88	5,001.9	-475.6	-346.8	14,262,452.39	1,678,993.90	39° 16' 33.553 N	80° 51' 49.254 W
5,125.0	25.72	212.91	5,024.5	-484.5	-352.6	14,262,443.44	1,678,988.12	39° 16' 33.465 N	80° 51' 49.327 W
5,150.0	26.07	212.45	5,047.0	-493.7	-358.5	14,262,434.25	1,678,982.22	39° 16' 33.374 N	80° 51' 49.402 W
5,175.0	26.13	212.77	5,069.4	-503.0	-364.4	14,262,424.99	1,678,976.30	39° 16' 33.283 N	80° 51' 49.478 W
5,200.0	27.06	212.45	5,091.8	-512.4	-370.5	14,262,415.56	1,678,970.26	39° 16' 33.189 N	80° 51' 49.555 W
5,279.0	25.00	210.69	5,162.8	-541.9	-388.6	14,262,386.04	1,678,952.10	39° 16' 32.898 N	80° 51' 49.787 W
First SDI MWD @ 5279									
5,369.0	23.25	207.96	5,244.9	-574.0	-406.7	14,262,353.99	1,678,934.06	39° 16' 32.581 N	80° 51' 50.017 W
5,458.0	22.05	208.33	5,327.0	-604.2	-422.8	14,262,323.77	1,678,917.90	39° 16' 32.283 N	80° 51' 50.223 W
5,548.0	20.08	222.52	5,411.1	-630.5	-441.3	14,262,297.49	1,678,899.43	39° 16' 32.023 N	80° 51' 50.458 W
5,637.0	19.84	237.81	5,494.8	-649.8	-464.4	14,262,278.17	1,678,876.30	39° 16' 31.832 N	80° 51' 50.753 W
5,727.0	20.82	238.99	5,579.2	-666.2	-491.1	14,262,261.79	1,678,849.67	39° 16' 31.671 N	80° 51' 51.092 W
5,817.0	24.35	240.55	5,662.3	-683.5	-520.9	14,262,244.43	1,678,819.79	39° 16' 31.500 N	80° 51' 51.472 W
5,906.0	21.55	237.40	5,744.2	-701.4	-550.7	14,262,226.59	1,678,790.04	39° 16' 31.324 N	80° 51' 51.851 W
5,996.0	20.98	239.43	5,828.1	-718.5	-578.5	14,262,209.49	1,678,762.24	39° 16' 31.155 N	80° 51' 52.205 W
6,086.0	23.90	240.09	5,911.3	-735.8	-608.2	14,262,192.20	1,678,732.56	39° 16' 30.984 N	80° 51' 52.583 W
6,175.0	26.13	240.32	5,991.9	-754.5	-640.8	14,262,173.51	1,678,699.90	39° 16' 30.800 N	80° 51' 52.999 W
6,220.0	24.49	239.73	6,032.6	-764.1	-657.5	14,262,163.90	1,678,683.23	39° 16' 30.705 N	80° 51' 53.211 W
6,265.0	24.49	251.29	6,073.6	-771.8	-674.4	14,262,156.20	1,678,666.34	39° 16' 30.629 N	80° 51' 53.426 W
6,310.0	26.56	262.79	6,114.2	-776.0	-693.2	14,262,151.94	1,678,647.51	39° 16' 30.588 N	80° 51' 53.666 W
6,355.0	27.29	274.25	6,154.3	-776.5	-713.5	14,262,151.45	1,678,627.22	39° 16' 30.583 N	80° 51' 53.924 W
6,400.0	27.17	285.51	6,194.4	-773.0	-733.7	14,262,154.96	1,678,607.02	39° 16' 30.618 N	80° 51' 54.181 W
6,444.0	27.45	296.29	6,233.5	-765.8	-752.5	14,262,162.14	1,678,588.24	39° 16' 30.689 N	80° 51' 54.420 W
6,489.0	28.58	307.23	6,273.2	-754.7	-770.4	14,262,173.26	1,678,570.36	39° 16' 30.800 N	80° 51' 54.647 W
6,534.0	30.40	313.98	6,312.4	-740.3	-787.1	14,262,187.68	1,678,553.59	39° 16' 30.942 N	80° 51' 54.860 W
6,579.0	34.43	316.08	6,350.4	-723.2	-804.2	14,262,204.76	1,678,536.56	39° 16' 31.111 N	80° 51' 55.076 W
6,618.0	39.14	316.00	6,381.6	-706.4	-820.4	14,262,221.56	1,678,520.35	39° 16' 31.278 N	80° 51' 55.282 W
Middlesex @ 6618									
6,624.0	39.87	315.99	6,386.3	-703.7	-823.0	14,262,224.31	1,678,517.70	39° 16' 31.305 N	80° 51' 55.316 W



Scientific Drilling International

Survey Report - Geographic



Company: Antero Resources
Project: Doddridge County WV
Site: Vogt: Seaborn/Violet/Tulip/Marks
Well: Duckbill Unit 1H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Duckbill Unit 1H
TVD Reference: PD 525: 1112' GL + 19' KB @ 1131.0usft
MD Reference: PD 525: 1112' GL + 19' KB @ 1131.0usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Antero NE

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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
6,669.0	46.16	317.15	6,419.1	-681.4	-844.1	14,262,246.60	1,678,496.62	39° 16' 31.526 N	80° 51' 55.583 W
6,713.0	51.15	317.60	6,448.2	-657.1	-866.5	14,262,270.90	1,678,474.26	39° 16' 31.766 N	80° 51' 55.867 W
6,758.0	56.45	319.19	6,474.8	-629.9	-890.6	14,262,298.06	1,678,450.17	39° 16' 32.035 N	80° 51' 56.173 W
6,798.0	61.30	321.00	6,495.4	-603.6	-912.5	14,262,324.32	1,678,428.23	39° 16' 32.295 N	80° 51' 56.452 W
Burket @ 6798									
6,803.0	61.91	321.21	6,497.8	-600.2	-915.3	14,262,327.75	1,678,425.46	39° 16' 32.329 N	80° 51' 56.487 W
6,848.0	67.26	323.59	6,517.1	-568.0	-940.0	14,262,359.95	1,678,400.69	39° 16' 32.648 N	80° 51' 56.802 W
6,862.0	68.80	324.28	6,522.4	-557.5	-947.7	14,262,370.44	1,678,393.05	39° 16' 32.752 N	80° 51' 56.899 W
Tully @ 6862									
6,893.0	72.21	325.75	6,532.7	-533.6	-964.4	14,262,394.38	1,678,376.30	39° 16' 32.989 N	80° 51' 57.111 W
6,933.0	75.33	328.80	6,543.9	-501.3	-985.2	14,262,426.69	1,678,355.55	39° 16' 33.309 N	80° 51' 57.375 W
Marcellus @ 6933									
6,938.0	75.72	329.18	6,545.1	-497.1	-987.7	14,262,430.84	1,678,353.06	39° 16' 33.350 N	80° 51' 57.406 W
6,983.0	77.41	333.24	6,555.6	-458.8	-1,008.7	14,262,469.19	1,678,331.99	39° 16' 33.729 N	80° 51' 57.674 W
7,027.0	83.01	336.73	6,563.1	-419.5	-1,027.1	14,262,508.46	1,678,313.67	39° 16' 34.118 N	80° 51' 57.906 W
7,072.0	87.58	339.37	6,566.8	-377.9	-1,043.8	14,262,550.05	1,678,296.92	39° 16' 34.529 N	80° 51' 58.118 W
7,158.0	88.13	339.17	6,570.0	-297.6	-1,074.2	14,262,630.41	1,678,266.50	39° 16' 35.324 N	80° 51' 58.504 W
7,248.0	88.16	342.39	6,572.9	-212.6	-1,103.8	14,262,715.34	1,678,236.90	39° 16' 36.164 N	80° 51' 58.879 W
7,337.0	91.22	343.51	6,573.4	-127.6	-1,129.9	14,262,800.41	1,678,210.80	39° 16' 37.006 N	80° 51' 59.209 W
7,427.0	91.46	343.43	6,571.3	-41.3	-1,155.5	14,262,886.67	1,678,185.20	39° 16' 37.859 N	80° 51' 59.533 W
7,517.0	91.52	339.96	6,568.9	44.1	-1,183.8	14,262,972.07	1,678,156.95	39° 16' 38.704 N	80° 51' 59.891 W
7,606.0	91.02	340.39	6,567.0	127.8	-1,214.0	14,263,055.78	1,678,126.78	39° 16' 39.532 N	80° 52' 0.273 W
7,696.0	90.85	342.90	6,565.5	213.2	-1,242.3	14,263,141.18	1,678,098.44	39° 16' 40.377 N	80° 52' 0.632 W
7,785.0	90.75	343.72	6,564.3	298.5	-1,267.8	14,263,226.42	1,678,072.88	39° 16' 41.220 N	80° 52' 0.955 W
7,875.0	91.31	343.61	6,562.6	384.8	-1,293.2	14,263,312.77	1,678,047.57	39° 16' 42.074 N	80° 52' 1.276 W
7,965.0	90.41	343.26	6,561.3	471.1	-1,318.8	14,263,399.03	1,678,021.92	39° 16' 42.928 N	80° 52' 1.601 W
8,054.0	90.61	342.58	6,560.5	556.1	-1,345.0	14,263,484.10	1,677,995.78	39° 16' 43.769 N	80° 52' 1.932 W
8,144.0	91.76	342.95	6,558.6	642.1	-1,371.6	14,263,570.03	1,677,969.12	39° 16' 44.619 N	80° 52' 2.269 W
8,234.0	90.95	342.15	6,556.5	727.9	-1,398.6	14,263,655.87	1,677,942.14	39° 16' 45.468 N	80° 52' 2.611 W
8,323.0	89.91	342.01	6,555.8	812.6	-1,426.0	14,263,740.55	1,677,914.76	39° 16' 46.306 N	80° 52' 2.958 W
8,413.0	90.75	342.69	6,555.3	898.3	-1,453.3	14,263,826.31	1,677,887.47	39° 16' 47.154 N	80° 52' 3.303 W
8,503.0	91.56	342.89	6,553.5	984.3	-1,479.9	14,263,912.26	1,677,860.85	39° 16' 48.005 N	80° 52' 3.640 W
8,592.0	89.74	342.11	6,552.5	1,069.2	-1,506.6	14,263,997.13	1,677,834.09	39° 16' 48.844 N	80° 52' 3.979 W
8,682.0	90.14	342.08	6,552.6	1,154.8	-1,534.3	14,264,082.77	1,677,806.42	39° 16' 49.691 N	80° 52' 4.329 W
8,772.0	90.88	342.87	6,551.8	1,240.6	-1,561.4	14,264,168.59	1,677,779.32	39° 16' 50.540 N	80° 52' 4.673 W
8,862.0	90.38	342.37	6,550.8	1,326.5	-1,588.3	14,264,254.47	1,677,752.43	39° 16' 51.390 N	80° 52' 5.013 W
8,951.0	90.44	341.17	6,550.2	1,411.0	-1,616.1	14,264,339.00	1,677,724.59	39° 16' 52.228 N	80° 52' 5.366 W
9,041.0	89.33	339.21	6,550.3	1,495.7	-1,646.6	14,264,423.67	1,677,694.09	39° 16' 53.064 N	80° 52' 5.752 W
9,130.0	88.35	340.23	6,552.1	1,579.2	-1,677.5	14,264,507.13	1,677,663.25	39° 16' 53.889 N	80° 52' 6.143 W
9,220.0	89.69	342.14	6,553.7	1,664.3	-1,706.5	14,264,592.31	1,677,634.23	39° 16' 54.732 N	80° 52' 6.510 W
9,310.0	90.53	342.28	6,553.5	1,750.0	-1,734.0	14,264,678.00	1,677,606.74	39° 16' 55.580 N	80° 52' 6.859 W
9,400.0	91.54	342.09	6,551.9	1,835.7	-1,761.5	14,264,763.67	1,677,579.21	39° 16' 56.427 N	80° 52' 7.207 W
9,490.0	90.40	342.33	6,550.4	1,921.4	-1,789.0	14,264,849.35	1,677,551.71	39° 16' 57.275 N	80° 52' 7.556 W
9,579.0	91.31	341.48	6,549.0	2,006.0	-1,816.7	14,264,933.94	1,677,524.07	39° 16' 58.112 N	80° 52' 7.906 W
9,669.0	92.08	342.43	6,546.4	2,091.5	-1,844.5	14,265,019.47	1,677,496.21	39° 16' 58.958 N	80° 52' 8.259 W
9,759.0	89.93	343.16	6,544.8	2,177.5	-1,871.1	14,265,105.43	1,677,469.59	39° 16' 59.808 N	80° 52' 8.596 W
9,848.0	90.43	343.43	6,544.5	2,262.7	-1,896.7	14,265,190.67	1,677,444.01	39° 17' 0.651 N	80° 52' 8.920 W
9,938.0	91.61	343.77	6,542.9	2,349.0	-1,922.1	14,265,276.99	1,677,418.60	39° 17' 1.505 N	80° 52' 9.241 W
10,028.0	89.49	342.99	6,542.0	2,435.3	-1,947.9	14,265,363.22	1,677,392.87	39° 17' 2.358 N	80° 52' 9.567 W
10,118.0	90.43	343.61	6,542.1	2,521.5	-1,973.7	14,265,449.43	1,677,367.00	39° 17' 3.211 N	80° 52' 9.895 W
10,208.0	88.15	342.77	6,543.2	2,607.6	-1,999.8	14,265,535.57	1,677,340.98	39° 17' 4.063 N	80° 52' 10.224 W
10,297.0	88.89	343.23	6,545.5	2,692.7	-2,025.8	14,265,620.65	1,677,314.97	39° 17' 4.904 N	80° 52' 10.553 W
10,387.0	88.15	342.20	6,547.9	2,778.6	-2,052.5	14,265,706.55	1,677,288.24	39° 17' 5.754 N	80° 52' 10.892 W
10,477.0	88.86	342.96	6,550.2	2,864.4	-2,079.4	14,265,792.40	1,677,261.30	39° 17' 6.603 N	80° 52' 11.233 W
10,566.0	89.46	343.44	6,551.5	2,949.6	-2,105.1	14,265,877.59	1,677,235.58	39° 17' 7.446 N	80° 52' 11.559 W



Scientific Drilling International
Survey Report - Geographic



Company: Antero Resources	Local Co-ordinate Reference: Well Duckbill Unit 1H
Project: Doddridge County WV	TVD Reference: PD 525: 1112' GL + 19' KB @ 1131.0usft
Site: Vogt: Seaborn/Violet/Tulip/Marks	MD Reference: PD 525: 1112' GL + 19' KB @ 1131.0usft
Well: Duckbill Unit 1H	North Reference: Grid
Wellbore: Original Wellpath	Survey Calculation Method: Minimum Curvature
Design: As Drilled	Database: Antero NE

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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
10,656.0	90.00	343.19	6,551.9	3,035.8	-2,131.0	14,265,963.80	1,677,209.74	39° 17' 8.299 N	80° 52' 11.886 W
10,746.0	90.84	340.68	6,551.3	3,121.4	-2,158.9	14,266,049.35	1,677,181.84	39° 17' 9.145 N	80° 52' 12.239 W
10,836.0	90.13	338.33	6,550.5	3,205.7	-2,190.4	14,266,133.64	1,677,150.33	39° 17' 9.979 N	80° 52' 12.639 W
10,925.0	88.76	338.84	6,551.4	3,288.5	-2,222.9	14,266,216.49	1,677,117.84	39° 17' 10.799 N	80° 52' 13.051 W
11,015.0	89.66	338.71	6,552.6	3,372.4	-2,255.5	14,266,300.38	1,677,085.26	39° 17' 11.629 N	80° 52' 13.464 W
11,105.0	90.91	339.79	6,552.2	3,456.6	-2,287.4	14,266,384.54	1,677,053.37	39° 17' 12.461 N	80° 52' 13.868 W
11,195.0	89.46	339.51	6,551.9	3,541.0	-2,318.7	14,266,468.92	1,677,022.07	39° 17' 13.296 N	80° 52' 14.264 W
11,284.0	89.73	339.12	6,552.5	3,624.2	-2,350.1	14,266,552.18	1,676,990.64	39° 17' 14.120 N	80° 52' 14.663 W
11,374.0	89.83	341.15	6,552.8	3,708.9	-2,380.7	14,266,636.82	1,676,960.06	39° 17' 14.957 N	80° 52' 15.050 W
11,464.0	90.17	339.49	6,552.8	3,793.6	-2,411.0	14,266,721.56	1,676,929.75	39° 17' 15.795 N	80° 52' 15.434 W
11,554.0	88.62	342.06	6,553.8	3,878.6	-2,440.6	14,266,806.52	1,676,900.12	39° 17' 16.636 N	80° 52' 15.810 W
11,643.0	89.36	342.53	6,555.4	3,963.3	-2,467.7	14,266,891.29	1,676,873.06	39° 17' 17.474 N	80° 52' 16.153 W
11,733.0	89.73	341.78	6,556.1	4,049.0	-2,495.3	14,266,976.96	1,676,845.48	39° 17' 18.322 N	80° 52' 16.502 W
11,823.0	90.74	340.19	6,555.7	4,134.1	-2,524.6	14,267,062.04	1,676,816.16	39° 17' 19.164 N	80° 52' 16.874 W
11,912.0	89.80	342.15	6,555.3	4,218.3	-2,553.3	14,267,146.27	1,676,787.43	39° 17' 19.997 N	80° 52' 17.237 W
12,002.0	90.07	340.08	6,555.4	4,303.5	-2,582.4	14,267,231.42	1,676,758.31	39° 17' 20.839 N	80° 52' 17.607 W
12,092.0	89.16	341.59	6,556.0	4,388.5	-2,612.0	14,267,316.43	1,676,728.76	39° 17' 21.680 N	80° 52' 17.981 W
12,182.0	88.72	343.13	6,557.7	4,474.2	-2,639.2	14,267,402.18	1,676,701.49	39° 17' 22.528 N	80° 52' 18.326 W
12,271.0	88.92	341.51	6,559.5	4,559.0	-2,666.3	14,267,486.96	1,676,674.47	39° 17' 23.367 N	80° 52' 18.669 W
12,361.0	90.20	344.08	6,560.2	4,645.0	-2,692.9	14,267,572.92	1,676,647.85	39° 17' 24.217 N	80° 52' 19.006 W
12,451.0	91.75	344.82	6,558.7	4,731.6	-2,717.0	14,267,659.61	1,676,623.73	39° 17' 25.075 N	80° 52' 19.311 W
12,541.0	90.67	343.96	6,556.8	4,818.3	-2,741.2	14,267,746.27	1,676,599.52	39° 17' 25.932 N	80° 52' 19.618 W
12,630.0	92.05	344.67	6,554.6	4,904.0	-2,765.3	14,267,831.92	1,676,575.46	39° 17' 26.779 N	80° 52' 19.922 W
12,720.0	91.48	342.59	6,551.9	4,990.3	-2,790.6	14,267,918.23	1,676,550.11	39° 17' 27.633 N	80° 52' 20.243 W
12,810.0	90.00	342.40	6,550.7	5,076.1	-2,817.7	14,268,004.05	1,676,523.04	39° 17' 28.482 N	80° 52' 20.566 W
12,900.0	91.01	343.18	6,549.9	5,162.1	-2,844.3	14,268,090.02	1,676,496.42	39° 17' 29.332 N	80° 52' 20.923 W
12,989.0	89.97	341.59	6,549.2	5,246.9	-2,871.2	14,268,174.84	1,676,469.49	39° 17' 30.171 N	80° 52' 21.264 W
13,079.0	90.34	341.02	6,548.9	5,332.1	-2,900.1	14,268,260.09	1,676,440.64	39° 17' 31.015 N	80° 52' 21.630 W
13,169.0	89.80	340.61	6,548.8	5,417.1	-2,929.7	14,268,345.09	1,676,411.06	39° 17' 31.856 N	80° 52' 22.005 W
13,259.0	90.47	340.64	6,548.6	5,502.0	-2,959.5	14,268,429.99	1,676,381.21	39° 17' 32.695 N	80° 52' 22.383 W
13,348.0	88.82	339.03	6,549.1	5,585.6	-2,990.2	14,268,513.53	1,676,350.53	39° 17' 33.522 N	80° 52' 22.772 W
13,438.0	89.33	339.62	6,550.6	5,669.8	-3,022.0	14,268,597.72	1,676,318.76	39° 17' 34.355 N	80° 52' 23.175 W
13,528.0	90.30	339.24	6,550.9	5,754.0	-3,053.6	14,268,681.98	1,676,287.14	39° 17' 35.188 N	80° 52' 23.576 W
13,617.0	89.66	338.89	6,550.9	5,837.1	-3,085.4	14,268,765.10	1,676,255.34	39° 17' 36.011 N	80° 52' 23.979 W
13,707.0	90.17	338.70	6,551.0	5,921.0	-3,117.9	14,268,849.01	1,676,222.78	39° 17' 36.841 N	80° 52' 24.391 W
13,797.0	89.23	340.77	6,551.5	6,005.5	-3,149.1	14,268,933.43	1,676,191.61	39° 17' 37.676 N	80° 52' 24.787 W
13,886.0	89.43	344.10	6,552.6	6,090.3	-3,176.0	14,269,018.26	1,676,164.76	39° 17' 38.515 N	80° 52' 25.127 W
13,976.0	89.93	343.05	6,553.1	6,176.6	-3,201.4	14,269,104.59	1,676,139.31	39° 17' 39.369 N	80° 52' 25.449 W
14,066.0	91.21	343.22	6,552.2	6,262.7	-3,227.5	14,269,190.71	1,676,113.20	39° 17' 40.221 N	80° 52' 25.780 W
14,155.0	89.09	343.53	6,551.9	6,348.0	-3,253.0	14,269,275.99	1,676,087.74	39° 17' 41.064 N	80° 52' 26.102 W
14,245.0	88.99	341.93	6,553.4	6,433.9	-3,279.7	14,269,361.91	1,676,061.03	39° 17' 41.914 N	80° 52' 26.441 W
14,335.0	89.60	343.56	6,554.5	6,519.9	-3,306.4	14,269,447.85	1,676,034.33	39° 17' 42.765 N	80° 52' 26.779 W
14,424.0	90.37	342.99	6,554.6	6,605.1	-3,332.0	14,269,533.09	1,676,008.72	39° 17' 43.608 N	80° 52' 27.103 W
14,514.0	91.58	343.48	6,553.0	6,691.3	-3,358.0	14,269,619.25	1,675,982.77	39° 17' 44.460 N	80° 52' 27.432 W
14,604.0	90.84	341.77	6,551.1	6,777.2	-3,384.8	14,269,705.12	1,675,955.90	39° 17' 45.309 N	80° 52' 27.772 W
14,694.0	89.63	340.88	6,550.8	6,862.4	-3,413.7	14,269,790.38	1,675,927.08	39° 17' 46.153 N	80° 52' 28.137 W
14,783.0	88.52	341.51	6,552.2	6,946.6	-3,442.3	14,269,874.61	1,675,898.40	39° 17' 46.986 N	80° 52' 28.501 W
14,873.0	89.70	342.36	6,553.6	7,032.2	-3,470.2	14,269,960.16	1,675,870.49	39° 17' 47.832 N	80° 52' 28.855 W
14,963.0	88.59	342.08	6,554.9	7,117.9	-3,497.7	14,270,045.85	1,675,843.01	39° 17' 48.680 N	80° 52' 29.203 W
15,053.0	91.31	344.10	6,555.0	7,204.0	-3,523.9	14,270,131.95	1,675,816.84	39° 17' 49.532 N	80° 52' 29.534 W
15,142.0	89.56	344.52	6,554.4	7,289.7	-3,548.0	14,270,217.63	1,675,792.77	39° 17' 50.379 N	80° 52' 29.839 W
15,232.0	86.97	342.57	6,557.1	7,375.9	-3,573.4	14,270,303.89	1,675,767.29	39° 17' 51.232 N	80° 52' 30.162 W
15,322.0	88.08	342.43	6,561.0	7,461.7	-3,600.5	14,270,389.64	1,675,740.26	39° 17' 52.081 N	80° 52' 30.504 W
15,411.0	88.89	342.07	6,563.3	7,546.4	-3,627.6	14,270,474.37	1,675,713.13	39° 17' 52.919 N	80° 52' 30.848 W
15,501.0	90.74	345.76	6,563.6	7,632.9	-3,652.5	14,270,560.83	1,675,688.20	39° 17' 53.774 N	80° 52' 31.164 W



Scientific Drilling International
Survey Report - Geographic



Company:	Antero Resources	Local Co-ordinate Reference:	Well Duckbill Unit 1H
Project:	Doddridge County WV	TVD Reference:	PD 525: 1112' GL + 19' KB @ 1131.0usft
Site:	Vogt: Seaborn/Violet/Tulip/Marks	MD Reference:	PD 525: 1112' GL + 19' KB @ 1131.0usft
Well:	Duckbill Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

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Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
15,590.0	92.22	345.57	6,561.3	7,719.1	-3,674.6	14,270,647.03	1,675,666.18	39° 17' 54.627 N	80° 52' 31.442 W
15,680.0	91.78	342.58	6,558.2	7,805.5	-3,699.2	14,270,733.51	1,675,641.50	39° 17' 55.482 N	80° 52' 31.755 W
15,770.0	89.90	340.84	6,556.8	7,891.0	-3,727.5	14,270,818.95	1,675,613.26	39° 17' 56.327 N	80° 52' 32.113 W
15,859.0	90.51	340.64	6,556.5	7,975.0	-3,756.8	14,270,902.97	1,675,583.90	39° 17' 57.158 N	80° 52' 32.485 W
15,949.0	90.10	337.93	6,556.1	8,059.2	-3,788.7	14,270,987.14	1,675,552.07	39° 17' 57.991 N	80° 52' 32.888 W
16,039.0	89.63	339.24	6,556.3	8,143.0	-3,821.5	14,271,070.92	1,675,519.21	39° 17' 58.820 N	80° 52' 33.305 W
16,128.0	89.43	341.23	6,557.0	8,226.7	-3,851.6	14,271,154.67	1,675,489.12	39° 17' 59.648 N	80° 52' 33.687 W
16,218.0	90.44	341.29	6,557.1	8,311.9	-3,880.5	14,271,239.90	1,675,460.20	39° 18' 0.492 N	80° 52' 34.053 W
16,308.0	91.48	340.79	6,555.6	8,397.0	-3,909.8	14,271,325.00	1,675,430.97	39° 18' 1.333 N	80° 52' 34.424 W
16,398.0	89.19	339.02	6,555.1	8,481.5	-3,940.7	14,271,409.51	1,675,400.05	39° 18' 2.169 N	80° 52' 34.816 W
16,487.0	90.13	338.52	6,555.6	8,564.5	-3,972.9	14,271,492.47	1,675,367.82	39° 18' 2.990 N	80° 52' 35.224 W
16,577.0	90.10	339.21	6,555.4	8,648.5	-4,005.4	14,271,576.42	1,675,335.37	39° 18' 3.821 N	80° 52' 35.636 W
16,667.0	91.28	339.42	6,554.3	8,732.6	-4,037.1	14,271,660.61	1,675,303.58	39° 18' 4.653 N	80° 52' 36.039 W
16,756.0	91.55	340.52	6,552.1	8,816.2	-4,067.6	14,271,744.20	1,675,273.11	39° 18' 5.480 N	80° 52' 36.425 W
16,846.0	90.20	340.38	6,550.8	8,901.0	-4,097.7	14,271,829.00	1,675,243.00	39° 18' 6.319 N	80° 52' 36.807 W
16,936.0	88.79	340.96	6,551.5	8,986.0	-4,127.5	14,271,913.92	1,675,213.21	39° 18' 7.159 N	80° 52' 37.185 W
17,025.0	90.47	342.84	6,552.1	9,070.5	-4,155.2	14,271,998.50	1,675,185.56	39° 18' 7.996 N	80° 52' 37.535 W
17,115.0	89.90	344.01	6,551.8	9,156.8	-4,180.8	14,272,084.76	1,675,159.89	39° 18' 8.849 N	80° 52' 37.860 W
17,205.0	91.21	343.30	6,551.0	9,243.2	-4,206.2	14,272,171.12	1,675,134.56	39° 18' 9.703 N	80° 52' 38.181 W
17,295.0	89.90	342.87	6,550.1	9,329.3	-4,232.4	14,272,257.22	1,675,108.38	39° 18' 10.555 N	80° 52' 38.513 W
17,384.0	88.89	343.08	6,551.0	9,414.3	-4,258.4	14,272,342.31	1,675,082.32	39° 18' 11.397 N	80° 52' 38.843 W
17,474.0	89.97	344.14	6,551.9	9,500.7	-4,283.8	14,272,428.65	1,675,056.93	39° 18' 12.251 N	80° 52' 39.164 W
17,564.0	91.52	343.96	6,550.8	9,587.2	-4,308.5	14,272,515.17	1,675,032.20	39° 18' 13.107 N	80° 52' 39.478 W
17,654.0	89.60	343.55	6,549.9	9,673.6	-4,333.7	14,272,601.60	1,675,007.01	39° 18' 13.962 N	80° 52' 39.797 W
17,743.0	89.66	343.78	6,550.4	9,759.0	-4,358.7	14,272,687.01	1,674,981.98	39° 18' 14.806 N	80° 52' 40.114 W
17,833.0	88.09	343.81	6,552.2	9,845.5	-4,383.9	14,272,773.41	1,674,956.87	39° 18' 15.661 N	80° 52' 40.432 W
17,923.0	88.69	342.87	6,554.7	9,931.6	-4,409.7	14,272,859.60	1,674,931.08	39° 18' 16.514 N	80° 52' 40.759 W
18,013.0	89.70	342.97	6,556.0	10,017.7	-4,436.1	14,272,945.62	1,674,904.65	39° 18' 17.365 N	80° 52' 41.094 W
18,102.0	90.94	342.77	6,555.5	10,102.7	-4,462.3	14,273,030.67	1,674,878.44	39° 18' 18.206 N	80° 52' 41.426 W
18,192.0	92.02	342.69	6,553.2	10,188.6	-4,489.0	14,273,116.58	1,674,851.73	39° 18' 19.056 N	80° 52' 41.764 W
Last SDI MWD @ 18192									
18,257.0	92.02	342.69	6,550.9	10,250.6	-4,508.3	14,273,178.60	1,674,832.40	39° 18' 19.669 N	80° 52' 42.009 W
Projectin To Bit @ 18257 MD / 6550 TVD									

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,618.0	6,381.6	Middlesex @ 6618		0.00	
6,798.0	6,495.4	Burket @ 6798		0.00	
6,862.0	6,522.4	Tully @ 6862		0.00	
6,933.0	6,543.9	Marcellus @ 6933		0.00	

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates	Comment	
		+N/-S (usft)	+E/-W (usft)	
5,279.0	5,162.8	-541.9	-388.6	First SDI MWD @ 5279
18,192.0	6,553.2	10,188.6	-4,489.0	Last SDI MWD @ 18192
18,257.0	6,550.9	10,250.6	-4,508.3	Projectin To Bit @ 18257 MD / 6550 TVD



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Site:	Vogt: Seaborn/Violet/Tulip/Marks	MD Reference:	PD 525: 1112' GL + 19' KB @ 1131.0usft
Well:	Duckbill Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

Checked By: _____ Approved By: _____ Date: _____

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