



**Richard Unit 2H**  
**Doddridge County WW**  
**Northing: 14242005.14**  
**Eastings: 1747848.84**  
**As Drilled**



Azimuths to Grid North  
 True North: -0.24°  
 Magnetic North: -8.82°  
 Magnetic Field  
 Strength: 52163.9nT  
 Dip Angle: 66.77°  
 Date: 10/3/2014  
 Model: BGGM2014

To convert Magnetic North to Grid, Subtract 8.82°  
 To convert True North to Grid, Subtract 0.24°

Precision 523: 01, 1331° ± KB, 1° @ 1350, 0.0mft  
 Gr: 1331.0

**WELL DETAILS: Richard Unit 2H**  
 Ground Level: 1331.0  
 Easting: 1747848.84  
 Northing: 14242005.14  
 Longitude: 89° 37' 14.462 W  
 Latitude: 38° 13' 8.439 N

**SITE DETAILS: Hughes Pct/Belton/Carroll/Earlewine/Gully/Hughes**  
 Center/Belton/McClain/Richard/Earlewine/Hughes/GA  
 Site Centre Northing: 14242041.56  
 Easting: 1747814.24  
 Positional Uncertainty: 2.0  
 Coverage: 0.24  
 Local North: Grid

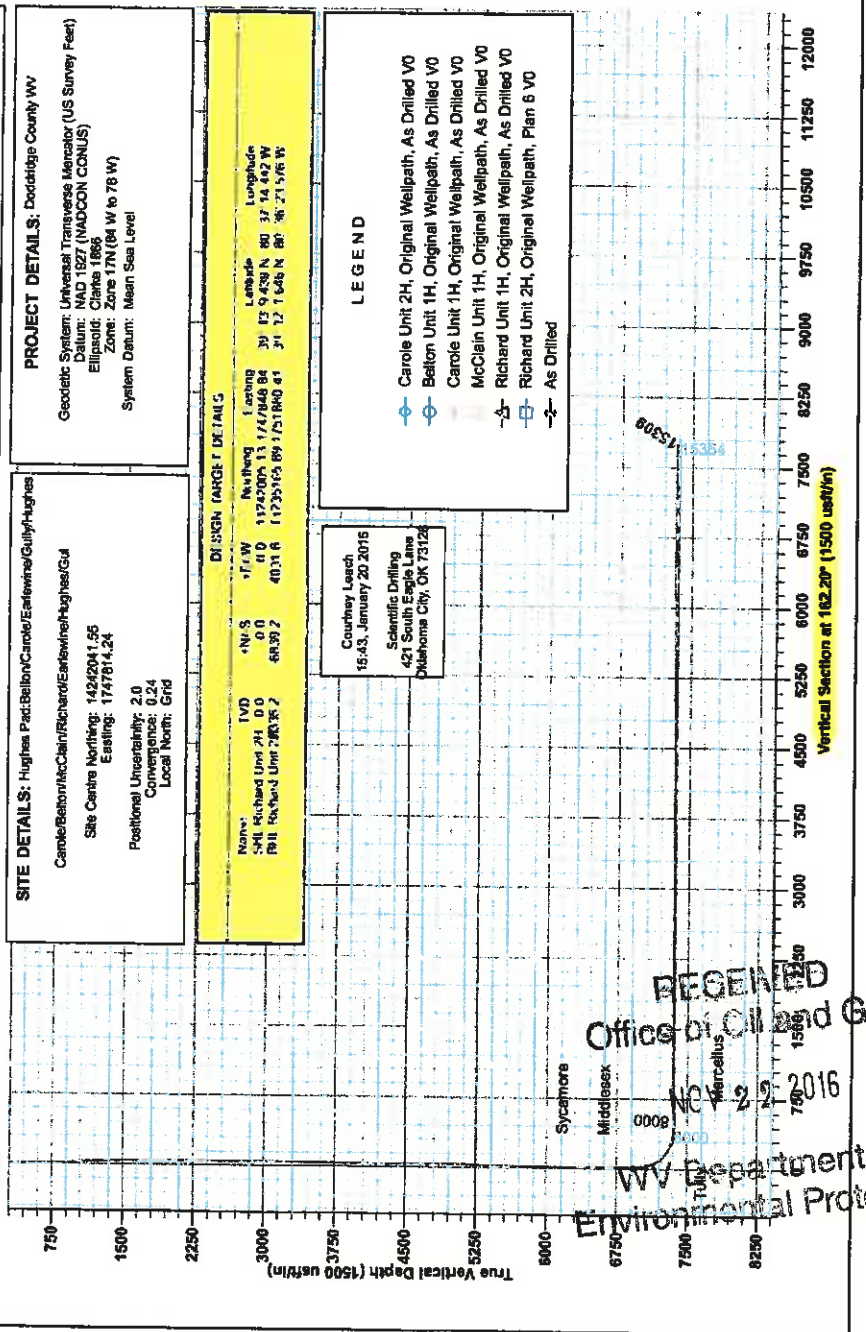
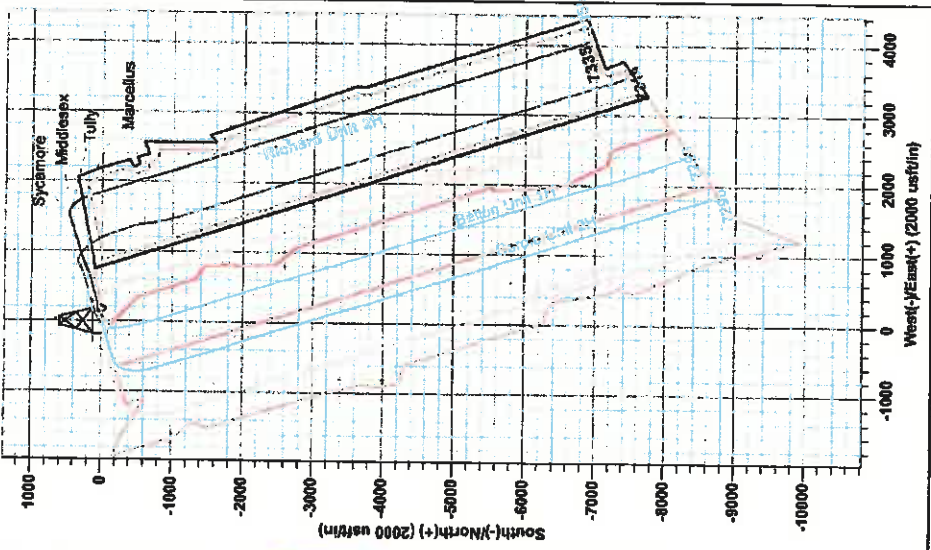
**PROJECT DETAILS: Doddridge County WW**  
 Geospatial System: Universal Transverse Mercator (US Survey Feet)  
 Datum: NAD 1983 (NADCON CONUS)  
 Ellipsoid: Clarke 1866  
 Zone: Zone 17N (84 W to 78 W)  
 System Datum: Mean Sea Level

Name	IVD	+N/S	+E/W	Northings	Eastings	Longitude	Latitude
SHL Richard Unit 2H	0.0	0.0	0.0	14242005.14	1747848.84	89° 37' 14.462 W	38° 13' 8.439 N
PHL Richard Unit 2H	0.0	0.0	0.0	14242005.14	1747848.84	89° 37' 14.462 W	38° 13' 8.439 N

Courtesy Leach  
 16-43, January 20 2015  
 Scientific Drilling  
 421 South Eagle Lane  
 Phenix City, GA 31752

**LEGEND**

- Carroll Unit 2H, Original Wellpath, As Drilled V0
- Belton Unit 1H, Original Wellpath, As Drilled V0
- Carroll Unit 1H, Original Wellpath, As Drilled V0
- McClain Unit 1H, Original Wellpath, As Drilled V0
- Richard Unit 1H, Original Wellpath, As Drilled V0
- Richard Unit 2H, Original Wellpath, Plan 6 V0
- As Drilled



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# **Antero**

**Doddridge County WV**

**Hughes Pad:Belton/Carole/Earlewine/Gully/Hughes**

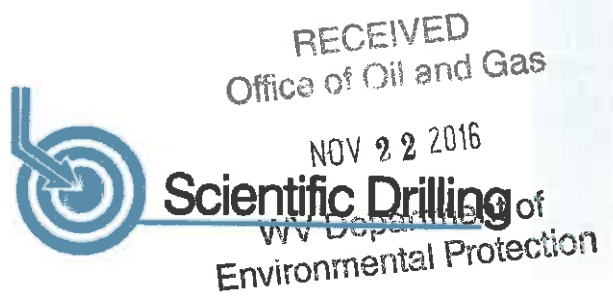
**Richard Unit 2H**

**Original Wellpath**

**Design: As Drilled**

## **EOW Completion Report**

**20 January, 2015**





**Company:** Antero  
**Project:** Doddridge County WV  
**Site:** Hughes Pad:Belton/Carole/Eartewine/Gully/Hugh  
**Well:** Richard Unit 2H  
**Wellbore:** Original Wellpath  
**Design:** As Drilled

**Local Co-ordinate Reference:** Well Richard Unit 2H  
**TVD Reference:** Precision 523: GL 1331' + KB 19' @ 1350.0usft  
**MD Reference:** Precision 523: GL 1331' + KB 19' @ 1350.0usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Oklahoma District

<b>Project</b>	Doddridge County WV, McClellan District		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Fee	<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)		

**Site** Hughes Pad:Belton/Carole/Eartewine/Gully/Hughes

**Site Position:**  
**From:** Map  
**Position Uncertainty:** 2.0 usft

**Northing:** 14,242,041.55 usft  
**Easting:** 1,747,814.24 usft  
**Slot Radius:** 13-3/16"

**Latitude:** 39° 13' 9.801 N  
**Longitude:** 80° 37' 14.880 W  
**Grid Convergence:** 0.24 °

**Well** Richard Unit 2H, Marcellus

**Well Position** +N/-S 0.0 usft  
 +E/-W 0.0 usft

**Position Uncertainty** 2.0 usft

**Northing:** 14,242,005.14 usft  
**Easting:** 1,747,848.84 usft  
**Wellhead Elevation:** 1,350.0 usft

**Latitude:** 39° 13' 9.439 N  
**Longitude:** 80° 37' 14.442 W  
**Ground Level:** 1,331.0 usft

**Wellbore** Original Wellpath

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	10/3/2014	-8.58	66.77	52,164

**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	162.20

**Survey Program** Date 1/20/2015

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
31.0	6,306.0	Survey #4 Final Gyro (Original Wellpath)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4
6,306.0	15,309.0	Survey #5 MWD (Original Wellpath)	MWD SD!	MWD - Standard ver 1.0.1

**Survey**

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
31.0	0.10	62.72	31.0	0.0	0.0	0.0	0.32
56.0	0.21	62.72	56.0	0.0	0.0	0.0	0.44
81.0	0.31	62.72	81.0	0.1	0.2	0.0	0.40
106.0	0.41	62.72	106.0	0.2	0.3	0.0	0.40
131.0	0.30	70.22	131.0	0.2	0.5	-0.1	0.48
156.0	0.17	60.58	156.0	0.3	0.6	-0.1	0.54
181.0	0.12	203.33	181.0	0.3	0.6	-0.1	0.50
206.0	0.01	86.76	206.0	0.2	0.6	0.0	0.15
231.0	0.03	215.60	231.0	0.2	0.6	0.0	0.15
256.0	0.07	291.16	256.0	0.2	0.6	-0.1	0.28

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**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Oklahoma District

**Survey**

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	EW (usft)	V. Sec (usft)	DLeg (°/100usft)
281.0	0.06	197.32	281.0	0.2	0.5	-0.1	0.38
306.0	0.03	180.01	306.0	0.2	0.5	0.0	0.13
331.0	0.09	231.20	331.0	0.2	0.5	0.0	0.30
356.0	0.08	100.74	356.0	0.2	0.5	0.0	0.62
381.0	0.13	58.57	381.0	0.2	0.6	0.0	0.36
406.0	0.16	207.86	406.0	0.2	0.6	0.0	1.12
431.0	0.12	171.04	431.0	0.1	0.6	0.1	0.38
456.0	0.11	112.86	456.0	0.1	0.6	0.1	0.45
481.0	0.12	175.63	481.0	0.0	0.6	0.1	0.48
506.0	0.16	158.23	506.0	0.0	0.6	0.2	0.23
531.0	0.12	169.00	531.0	-0.1	0.6	0.3	0.19
556.0	0.19	165.96	556.0	-0.1	0.7	0.3	0.28
581.0	0.14	209.11	581.0	-0.2	0.6	0.4	0.52
606.0	0.09	123.33	606.0	-0.2	0.7	0.4	0.64
631.0	0.10	113.54	631.0	-0.3	0.7	0.5	0.08
656.0	0.14	169.09	656.0	-0.3	0.7	0.5	0.47
681.0	0.44	155.36	681.0	-0.4	0.8	0.6	1.22
706.0	1.14	141.19	706.0	-0.7	1.0	1.0	2.89
731.0	2.23	137.06	731.0	-1.2	1.4	1.6	4.38
756.0	2.75	139.43	756.0	-2.1	2.2	2.6	2.12
781.0	3.27	141.56	780.9	-3.1	3.0	3.8	2.13
806.0	3.64	140.04	805.9	-4.2	3.9	5.2	1.52
831.0	4.40	139.33	830.8	-5.6	5.1	6.9	3.05
856.0	4.72	139.20	855.7	-7.1	6.4	8.7	1.28
881.0	4.77	139.30	880.7	-8.7	7.7	10.6	0.20
906.0	4.84	139.39	905.6	-10.2	9.1	12.5	0.28
931.0	4.85	138.74	930.5	-11.8	10.5	14.5	0.22
956.0	4.86	139.51	955.4	-13.4	11.9	16.4	0.26
981.0	4.87	139.60	980.3	-15.0	13.2	18.4	0.05
1,006.0	4.62	138.05	1,005.2	-16.6	14.6	20.3	1.12
1,031.0	4.19	138.17	1,030.1	-18.0	15.9	22.0	1.72
1,056.0	4.02	137.55	1,055.1	-19.4	17.1	23.7	0.70
1,081.0	3.68	138.17	1,080.0	-20.6	18.2	25.2	1.37
1,106.0	3.42	137.74	1,105.0	-21.8	19.2	26.6	1.05
1,131.0	3.18	137.84	1,129.9	-22.8	20.2	27.9	0.96
1,156.0	3.01	137.63	1,154.9	-23.8	21.1	29.1	0.68
1,181.0	2.98	139.37	1,179.9	-24.8	22.0	30.4	0.38
1,206.0	2.56	139.94	1,204.8	-25.7	22.8	31.4	1.68
1,231.0	2.32	139.71	1,229.8	-26.5	23.4	32.4	0.96
1,256.0	2.15	141.21	1,254.8	-27.3	24.1	33.6	0.72
1,281.0	1.85	140.45	1,279.8	-28.0	24.6	34.7	1.20
1,306.0	1.61	143.12	1,304.8	-28.6	25.1	34.9	1.01
1,331.0	1.56	147.29	1,329.7	-29.1	25.5	35.1	0.50
1,356.0	1.47	150.05	1,354.7	-29.7	25.8	36.2	0.46

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1,381.0	1.28	149.16	1,379.7	-30.2	26.1	36.7	0.76
1,406.0	1.29	150.23	1,404.7	-30.7	26.4	37.3	0.10
1,431.0	1.21	157.25	1,429.7	-31.2	26.7	37.8	0.69
1,456.0	1.02	159.66	1,454.7	-31.6	26.8	38.3	0.78
1,481.0	0.87	162.83	1,479.7	-32.0	27.0	38.7	0.64
1,506.0	0.67	176.43	1,504.7	-32.3	27.0	39.1	1.08
1,531.0	0.64	172.78	1,529.7	-32.6	27.1	39.3	0.21
1,556.0	0.53	169.00	1,554.7	-32.9	27.1	39.6	0.47
1,581.0	0.27	162.72	1,579.7	-33.0	27.1	39.8	1.05
1,606.0	0.26	152.22	1,604.7	-33.2	27.2	39.9	0.20
1,631.0	0.22	152.75	1,629.7	-33.2	27.2	40.0	0.16
1,656.0	0.21	148.00	1,654.7	-33.3	27.3	40.1	0.11
1,681.0	0.17	150.81	1,679.7	-33.4	27.3	40.2	0.17
1,706.0	0.25	142.32	1,704.7	-33.5	27.4	40.2	0.34
1,731.0	0.18	127.13	1,729.7	-33.5	27.4	40.3	0.36
1,756.0	0.30	150.96	1,754.7	-33.6	27.5	40.4	0.61
1,781.0	0.28	142.01	1,779.7	-33.7	27.6	40.5	0.20
1,806.0	0.21	171.31	1,804.7	-33.8	27.6	40.6	0.56
1,831.0	0.19	141.89	1,829.7	-33.9	27.7	40.7	0.41
1,856.0	0.28	139.97	1,854.7	-34.0	27.7	40.8	0.36
1,881.0	0.27	135.30	1,879.7	-34.1	27.8	40.9	0.10
1,906.0	0.19	159.53	1,904.7	-34.1	27.9	41.0	0.50
1,931.0	0.27	139.04	1,929.7	-34.2	27.9	41.1	0.45
1,956.0	0.18	131.01	1,954.7	-34.3	28.0	41.2	0.38
1,981.0	0.08	136.05	1,979.7	-34.3	28.0	41.3	0.48
2,006.0	0.07	44.14	2,004.7	-34.3	28.0	41.3	0.37
2,031.0	0.03	90.40	2,029.7	-34.3	28.1	41.3	0.22
2,056.0	0.10	125.76	2,054.7	-34.3	28.1	41.3	0.31
2,081.0	0.12	77.55	2,079.7	-34.3	28.1	41.3	0.37
2,106.0	0.16	107.69	2,104.7	-34.3	28.2	41.3	0.33
2,131.0	0.19	142.93	2,129.7	-34.4	28.2	41.4	0.44
2,156.0	0.18	161.12	2,154.7	-34.5	28.3	41.5	0.24
2,181.0	0.05	105.16	2,179.7	-34.5	28.3	41.5	0.63
2,206.0	0.13	127.89	2,204.7	-34.5	28.3	41.5	0.34
2,231.0	0.13	130.88	2,229.7	-34.6	28.4	41.6	0.03
2,256.0	0.03	128.07	2,254.7	-34.6	28.4	41.6	0.40
2,281.0	0.08	117.04	2,279.7	-34.6	28.4	41.6	0.20
2,306.0	0.07	104.75	2,304.7	-34.6	28.4	41.6	0.08
2,331.0	0.05	277.65	2,329.7	-34.6	28.5	41.6	0.48
2,356.0	0.10	38.89	2,354.7	-34.6	28.5	41.6	0.53
2,381.0	0.14	167.31	2,379.7	-34.6	28.5	41.7	0.87
2,406.0	0.15	213.31	2,404.7	-34.7	28.5	41.7	0.45
2,431.0	0.22	223.96	2,429.7	-34.7	28.4	41.7	0.31
2,456.0	0.19	188.85	2,454.7	-34.8	28.4	41.8	0.51
2,481.0	0.13	226.24	2,479.7	-34.9	28.3	41.9	0.47

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MD (usft)	Inc (")	Azi (azimuth) (")	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg ("/100usft)
2,506.0	0.16	270.92	2,504.7	-34.9	28.3	41.9	0.45
2,531.0	0.19	273.95	2,529.7	-34.9	28.2	41.8	0.13
2,556.0	0.22	279.59	2,554.7	-34.9	28.1	41.8	0.14
2,581.0	0.22	281.47	2,579.7	-34.8	28.0	41.7	0.03
2,606.0	0.33	282.94	2,604.7	-34.8	27.9	41.7	0.56
2,631.0	0.24	273.55	2,629.7	-34.8	27.8	41.7	0.42
2,656.0	0.29	263.28	2,654.7	-34.9	27.7	41.6	0.28
2,681.0	0.27	266.48	2,679.7	-34.9	27.6	41.6	0.10
2,706.0	0.31	259.63	2,704.7	-34.9	27.4	41.6	0.21
2,731.0	0.24	251.69	2,729.7	-34.9	27.3	41.6	0.32
2,756.0	0.34	263.25	2,754.7	-34.9	27.2	41.6	0.46
2,781.0	0.28	263.11	2,779.7	-34.9	27.1	41.5	0.24
2,806.0	0.42	263.55	2,804.7	-35.0	26.9	41.5	0.56
2,831.0	0.29	269.61	2,829.7	-35.0	26.8	41.5	0.54
2,856.0	0.34	258.51	2,854.7	-35.0	26.6	41.5	0.31
2,881.0	0.30	263.51	2,879.7	-35.0	26.5	41.4	0.19
2,906.0	0.39	260.40	2,904.7	-35.0	26.3	41.4	0.37
2,931.0	0.45	257.38	2,929.7	-35.1	26.1	41.4	0.26
2,956.0	0.41	255.29	2,954.7	-35.1	26.0	41.4	0.17
2,981.0	0.38	255.69	2,979.7	-35.2	25.8	41.4	0.12
3,006.0	0.40	253.25	3,004.7	-35.2	25.6	41.4	0.10
3,031.0	0.44	256.67	3,029.7	-35.3	25.5	41.3	0.19
3,056.0	0.40	248.54	3,054.7	-35.3	25.3	41.3	0.29
3,081.0	0.45	250.47	3,079.7	-35.4	25.1	41.4	0.21
3,106.0	0.48	264.30	3,104.7	-35.4	24.9	41.3	0.46
3,131.0	0.40	252.06	3,129.7	-35.5	24.7	41.3	0.49
3,156.0	0.45	254.52	3,154.7	-35.5	24.5	41.3	0.21
3,181.0	0.46	256.73	3,179.7	-35.6	24.4	41.3	0.08
3,206.0	0.42	250.20	3,204.7	-35.6	24.2	41.3	0.26
3,231.0	0.44	256.09	3,229.7	-35.7	24.0	41.3	0.19
3,256.0	0.43	247.75	3,254.7	-35.7	23.8	41.3	0.26
3,281.0	0.49	259.60	3,279.7	-35.8	23.6	41.3	0.45
3,306.0	0.45	256.03	3,304.7	-35.8	23.4	41.3	0.20
3,331.0	0.48	255.95	3,329.7	-35.9	23.2	41.3	0.12
3,356.0	0.25	41.23	3,354.7	-35.9	23.2	41.2	2.80
3,381.0	1.32	57.22	3,379.7	-35.7	23.4	41.3	4.33
3,406.0	2.89	59.44	3,404.7	-35.2	24.2	41.3	6.29
3,431.0	4.22	61.83	3,429.6	-34.4	27.5	40.6	5.35
3,456.0	5.58	66.26	3,454.5	-33.5	27.5	40.3	5.64
3,481.0	6.39	72.77	3,479.4	-32.6	29.9	40.2	4.22
3,506.0	6.72	77.15	3,504.2	-31.9	32.7	40.3	2.40
3,531.0	6.91	76.95	3,529.0	-31.2	35.6	40.3	0.77
3,556.0	6.92	77.01	3,553.9	-30.5	38.3	40.8	0.05
3,581.0	7.36	72.80	3,578.7	-29.7	41.5	41.0	2.73

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EOW Completion Report



Company: Antero  
 Project: Doddridge County WV  
 Site: Hughes Pad:Belton/Carole/Earlewine/Gully/Hugh  
 Well: Richard Unit 2H  
 Wellbore: Original Wellpath  
 Design: As Drilled

Local Co-ordinate Reference: Well Richard Unit 2H  
 TVD Reference: Precision 523: GL 1331' + KB 19' @ 1350.0usft  
 MD Reference: Precision 523: GL 1331' + KB 19' @ 1350.0usft  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature  
 Database: Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
3,606.0	8.14	67.58	3,603.4	-28.6	44.7	40.9	4.20
3,631.0	9.08	64.41	3,628.2	-27.0	48.1	40.4	4.21
3,656.0	9.84	64.31	3,652.8	-25.3	51.8	39.9	3.04
3,681.0	10.49	65.99	3,677.4	-23.4	55.8	39.3	2.86
3,706.0	11.27	64.53	3,702.0	-21.4	60.1	38.8	3.31
3,731.0	11.79	63.46	3,726.5	-19.2	64.6	38.1	2.25
3,756.0	11.82	64.03	3,750.9	-17.0	69.2	37.3	0.48
3,781.0	11.76	63.70	3,775.4	-14.7	73.8	36.6	0.36
3,806.0	11.91	64.53	3,799.9	-12.5	78.4	35.8	0.91
3,831.0	12.51	64.87	3,824.3	-10.2	83.1	35.2	2.42
3,856.0	13.03	64.45	3,848.7	-7.9	88.1	34.4	2.11
3,881.0	13.40	65.00	3,873.0	-5.4	93.3	33.7	1.56
3,906.0	13.57	66.42	3,897.4	-3.0	98.6	33.0	1.49
3,931.0	13.61	68.50	3,921.7	-0.8	104.0	32.5	1.96
3,956.0	14.13	69.34	3,945.9	1.4	109.6	32.2	2.23
3,981.0	14.61	69.47	3,970.1	3.6	115.4	31.9	1.92
4,006.0	15.48	70.02	3,994.3	5.8	121.5	31.6	3.53
4,031.0	16.47	69.09	4,018.3	8.2	128.0	31.3	4.09
4,056.0	17.24	68.86	4,042.2	10.8	134.7	30.9	3.09
4,081.0	18.00	68.91	4,066.1	13.5	141.8	30.5	3.04
4,106.0	18.62	69.09	4,089.8	16.4	149.1	30.0	2.49
4,131.0	19.29	69.82	4,113.4	19.2	156.7	29.6	2.84
4,156.0	20.11	70.22	4,137.0	22.1	164.7	29.3	3.32
4,181.0	20.74	70.33	4,160.4	25.0	172.9	29.0	2.52
4,206.0	21.28	70.94	4,183.8	28.0	181.3	28.8	2.33
4,231.0	21.77	71.82	4,207.0	30.9	190.0	28.6	2.35
4,256.0	22.33	72.69	4,230.2	33.8	199.0	28.6	2.59
4,281.0	22.84	73.06	4,253.3	36.6	208.1	28.8	2.12
4,306.0	23.35	73.76	4,276.3	39.4	217.5	29.0	2.32
4,331.0	24.38	74.37	4,299.1	42.2	227.3	29.3	4.24
4,356.0	25.00	74.62	4,321.8	45.0	237.3	29.7	2.51
4,381.0	25.69	74.73	4,344.4	47.8	247.6	30.2	2.77
4,406.0	26.34	74.58	4,366.9	50.7	258.2	30.6	2.61
4,431.0	26.47	74.02	4,389.3	53.7	268.9	31.1	1.12
4,456.0	26.63	73.35	4,411.7	56.9	279.6	31.3	1.36
4,481.0	26.97	73.54	4,434.0	60.1	290.5	31.3	1.40
4,506.0	26.92	73.29	4,456.3	63.3	301.3	31.0	0.50
4,531.0	26.45	72.63	4,478.6	66.6	312.0	32.0	2.22
4,556.0	26.73	72.22	4,500.9	70.0	322.7	32.0	1.34
4,581.0	27.21	72.02	4,523.2	73.5	333.5	32.8	1.95
4,606.0	27.52	71.97	4,545.4	77.0	344.4	32.0	1.34
4,631.0	27.41	71.21	4,567.6	80.7	355.4	31.6	1.47
4,656.0	27.68	71.01	4,589.8	84.4	366.3	31.6	1.14
4,681.0	27.83	70.92	4,611.9	88.2	377.3	31.4	0.62

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4,708.0	27.85	70.84	4,634.0	92.0	388.3	31.1	0.17
4,731.0	27.60	70.78	4,656.1	95.8	399.3	30.8	1.01
4,756.0	27.91	71.43	4,678.3	99.6	410.3	30.6	1.73
4,781.0	28.10	72.13	4,700.3	103.3	421.5	30.5	1.52
4,806.0	28.27	72.32	4,722.4	106.9	432.7	30.5	0.77
4,831.0	28.18	72.43	4,744.4	110.5	444.0	30.6	0.42
4,856.0	28.37	72.90	4,766.4	114.0	455.3	30.7	1.17
4,881.0	28.50	73.56	4,788.4	117.4	466.7	30.9	1.36
4,906.0	28.64	74.13	4,810.4	120.8	478.2	31.2	1.23
4,931.0	29.12	74.61	4,832.2	124.0	489.8	31.7	2.13
4,956.0	29.30	74.83	4,854.1	127.2	501.6	32.2	0.84
4,981.0	29.16	74.71	4,875.9	130.4	513.4	32.8	0.61
5,006.0	29.04	74.21	4,897.7	133.7	525.1	33.2	1.08
5,031.0	28.75	73.62	4,919.6	137.0	536.7	33.6	1.63
5,056.0	28.41	72.99	4,941.8	140.5	548.1	33.8	1.82
5,081.0	27.99	72.37	4,963.6	144.0	559.4	33.9	2.05
5,106.0	27.52	71.82	4,985.7	147.6	570.5	33.9	2.14
5,131.0	27.09	71.37	5,007.9	151.2	581.4	33.8	1.91
5,156.0	27.20	71.14	5,030.2	154.8	592.2	33.6	0.61
5,181.0	27.66	71.17	5,052.4	158.6	603.1	33.4	1.84
5,206.0	27.66	71.43	5,074.5	162.3	614.1	33.2	0.48
5,231.0	27.00	70.81	5,096.7	166.0	624.9	33.0	2.88
5,256.0	27.15	70.33	5,119.0	169.8	635.7	32.7	1.06
5,281.0	27.01	69.96	5,141.2	173.7	646.4	32.3	0.88
5,306.0	26.65	69.50	5,163.6	177.6	657.0	31.8	1.66
5,331.0	25.97	68.55	5,186.0	181.5	667.3	31.2	3.20
5,356.0	26.07	68.37	5,208.4	185.6	677.5	30.4	0.51
5,381.0	25.88	67.92	5,230.9	189.6	687.7	29.7	1.10
5,406.0	25.92	67.64	5,253.4	193.8	697.8	28.8	0.51
5,431.0	26.42	67.70	5,275.8	197.9	708.0	28.0	2.00
5,456.0	26.67	67.88	5,298.2	202.2	718.3	27.1	1.05
5,481.0	27.02	68.12	5,320.5	206.4	728.8	26.3	1.47
5,506.0	26.80	67.54	5,342.8	210.7	739.3	25.4	1.37
5,531.0	26.78	66.95	5,365.1	215.0	749.7	24.4	1.07
5,556.0	27.39	67.31	5,387.4	219.5	760.1	23.4	2.53
5,581.0	27.47	69.29	5,409.6	223.7	770.8	22.6	3.66
5,606.0	27.47	69.62	5,431.7	227.8	781.6	21.7	0.61
5,631.0	27.35	69.33	5,453.9	231.8	792.4	20.7	0.72
5,656.0	27.37	69.15	5,476.1	235.9	803.2	21.0	0.34
5,681.0	27.45	69.16	5,498.3	240.0	814.0	20.3	0.32
5,706.0	27.39	68.81	5,520.5	244.1	824.7	19.5	0.69
5,731.0	27.12	69.84	5,542.7	248.1	835.4	19.1	2.17
5,756.0	27.04	70.50	5,565.0	252.0	846.1	18.7	1.24
5,781.0	26.65	70.37	5,587.3	255.8	856.7	18.4	1.58

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EOW Completion Report



<b>Company:</b> Antero	<b>Local Co-ordinate Reference:</b> Well Richard Unit 2H
<b>Project:</b> Doddridge County WV	<b>TVD Reference:</b> Precision 523: GL 1331' + KB 19' @ 1350.0usft
<b>Site:</b> Hughes Pad:Belton/Carole/Earlewine/Gully/Hugh	<b>MD Reference:</b> Precision 523: GL 1331' + KB 19' @ 1350.0usft
<b>Well:</b> Richard 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> Oklahoma District

Survey

MD (usft)	Inc (")	Azi (azimuth) (")	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
5,806.0	26.28	70.31	5,609.7	259.5	867.2	18.0	1.48
5,831.0	26.43	70.07	5,632.1	263.3	877.7	17.6	0.74
5,856.0	26.61	70.38	5,654.5	267.1	888.2	17.2	0.91
5,881.0	26.56	71.03	5,676.8	270.8	898.7	16.9	1.18
5,906.0	26.58	70.89	5,699.2	274.4	909.3	16.7	0.26
5,931.0	26.51	70.77	5,721.5	278.1	919.8	16.4	0.35
5,956.0	25.64	71.15	5,744.0	281.7	930.2	16.2	3.54
5,981.0	24.97	71.43	5,766.6	285.1	940.4	16.0	2.72
6,006.0	24.83	71.42	5,789.3	288.4	950.3	15.9	0.56
6,031.0	24.84	72.22	5,812.0	291.7	960.3	15.8	1.34
6,056.0	25.05	72.82	5,834.6	294.9	970.4	15.9	1.32
6,081.0	25.06	72.75	5,857.3	298.0	980.5	16.0	0.13
6,106.0	24.94	72.48	5,879.9	301.2	990.6	16.1	0.66
6,131.0	25.58	72.20	5,902.5	304.4	1,000.7	16.1	2.60
6,156.0	25.86	71.61	5,925.1	307.8	1,011.0	16.0	1.52
6,181.0	26.27	71.00	5,947.5	311.3	1,021.4	15.9	1.96
6,206.0	26.14	71.16	5,970.0	314.9	1,031.9	15.6	0.59
6,231.0	25.69	72.14	5,992.4	318.3	1,042.3	15.5	2.48
6,256.0	25.63	72.83	6,015.0	321.6	1,052.6	15.6	1.22
6,281.0	25.88	72.68	6,037.5	324.8	1,062.9	15.7	1.03
6,306.0	26.07	72.94	6,060.0	328.0	1,073.4	15.8	0.89
6,482.0	27.08	70.81	6,217.4	352.5	1,148.2	15.3	0.79
6,571.0	25.69	69.93	6,297.1	365.8	1,185.5	14.1	1.62
6,661.0	23.70	73.15	6,378.9	377.8	1,221.1	13.6	2.67
6,750.0	22.87	73.53	6,460.6	387.9	1,254.8	14.3	0.95
6,839.0	24.02	71.26	6,542.3	398.6	1,288.6	14.4	1.64
6,829.0	26.57	70.36	6,623.6	411.2	1,324.9	13.5	2.87
7,018.0	28.60	73.95	6,702.5	423.8	1,364.1	13.5	2.95
7,108.0	28.66	75.48	6,781.5	435.2	1,405.7	15.4	0.82
7,198.0	27.30	73.47	6,861.0	446.5	1,446.4	17.1	1.84
<b>Sycamore</b>							
7,287.0	25.59	73.79	6,940.7	457.6	1,484.4	18.0	1.93
7,317.0	25.99	73.40	6,967.7	461.3	1,496.9	18.4	1.45
7,347.0	26.97	78.28	6,994.6	464.6	1,509.9	19.2	7.95
7,377.0	28.19	84.61	7,021.1	466.6	1,523.6	21.5	10.58
7,382.0	28.34	85.70	7,025.6	466.8	1,526.0	22.0	10.74
<b>Middlesex</b>							
7,407.0	29.21	90.98	7,047.5	467.2	1,538.0	25.3	15.07
7,437.0	29.70	98.38	7,073.6	466.0	1,552.7	38.0	12.23
7,466.0	30.37	103.85	7,098.7	463.2	1,566.9	38.0	9.72
7,496.0	31.98	109.27	7,124.4	458.7	1,581.7	37.4	10.78
7,526.0	34.46	115.26	7,149.5	452.5	1,596.9	69.5	13.70
7,555.0	37.54	120.29	7,172.9	444.5	1,612.0	69.5	15.07
7,585.0	40.63	125.53	7,196.2	434.2	1,627.8	69.5	15.07

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7,598.0	42.22	127.40	7,206.0	429.1	1,634.7	91.2	15.49
<b>Tully</b>							
7,615.0	44.34	129.68	7,218.4	421.8	1,643.9	100.9	15.49
7,645.0	47.91	133.39	7,239.2	407.5	1,660.0	119.5	14.87
7,675.0	51.31	137.19	7,258.6	391.3	1,676.1	139.8	14.88
7,705.0	54.87	141.30	7,276.6	373.1	1,691.7	161.9	16.15
7,734.0	57.93	145.84	7,292.7	353.6	1,706.0	184.8	16.77
7,764.0	61.52	149.62	7,307.8	331.7	1,719.9	209.9	16.17
7,794.0	65.58	152.59	7,321.2	308.2	1,732.8	236.2	16.18
7,823.0	70.02	155.21	7,332.1	284.1	1,744.6	262.8	17.44
7,830.0	71.07	155.86	7,334.4	278.1	1,747.3	269.4	17.37
<b>Marcellus</b>							
7,853.0	74.53	157.95	7,341.2	257.9	1,756.0	291.2	17.37
7,883.0	78.30	161.48	7,348.3	230.6	1,766.1	320.4	16.99
7,913.0	80.76	164.07	7,353.7	202.4	1,774.8	349.8	11.80
7,943.0	82.26	163.81	7,358.2	173.9	1,783.0	379.5	5.07
7,973.0	84.52	162.83	7,361.6	145.3	1,791.6	409.3	8.20
8,037.0	89.70	161.03	7,364.9	84.6	1,811.4	473.2	8.57
8,129.0	91.41	161.76	7,364.0	-2.6	1,840.7	565.2	2.02
8,223.0	92.25	163.06	7,361.0	-92.2	1,869.1	659.1	1.65
8,317.0	90.71	162.17	7,358.5	-181.8	1,897.2	753.1	1.89
8,411.0	90.13	161.44	7,357.8	-271.1	1,926.5	847.1	0.99
8,505.0	91.04	161.24	7,356.9	-360.2	1,956.6	941.1	0.99
8,598.0	91.21	162.78	7,355.1	-448.6	1,985.3	1,034.0	1.67
8,692.0	90.54	162.71	7,353.6	-538.4	2,013.2	1,128.0	0.72
8,786.0	89.97	162.86	7,353.2	-628.2	2,041.0	1,222.0	0.63
8,880.0	89.97	161.73	7,353.3	-717.7	2,069.6	1,316.0	1.20
8,974.0	90.37	162.82	7,353.0	-807.2	2,098.2	1,410.0	1.24
9,068.0	90.57	160.95	7,352.2	-896.6	2,127.5	1,504.0	2.00
9,161.0	90.00	162.21	7,351.7	-984.8	2,156.8	1,597.0	1.49
9,256.0	90.47	162.51	7,351.4	-1,075.3	2,185.6	1,692.0	0.59
9,345.0	89.90	163.95	7,351.1	-1,160.5	2,211.3	1,781.0	1.74
9,435.0	89.63	162.82	7,351.4	-1,246.8	2,237.0	1,871.0	1.29
9,524.0	88.99	161.37	7,352.5	-1,331.5	2,264.4	1,959.9	1.78
9,614.0	89.73	163.08	7,353.5	-1,417.2	2,291.9	2,049.9	2.07
9,703.0	91.11	163.51	7,352.9	-1,502.4	2,317.5	2,138.9	1.62
9,793.0	91.31	163.21	7,351.0	-1,588.6	2,343.2	2,228.9	1.62
9,882.0	90.00	162.50	7,349.9	-1,673.7	2,369.5	2,317.9	1.67
9,972.0	90.07	161.79	7,349.9	-1,759.3	2,397.1	2,407.9	0.79
10,061.0	90.37	161.50	7,349.5	-1,843.8	2,425.1	2,496.9	0.47
10,151.0	90.13	160.20	7,349.2	-1,928.8	2,454.6	2,586.8	1.47
10,241.0	90.00	162.12	7,349.0	-2,014.0	2,483.7	2,676.8	1.58
10,330.0	90.84	160.99	7,348.4	-2,098.4	2,511.8	2,765.8	1.58
10,420.0	89.93	162.22	7,347.8	-2,183.8	2,540.2	2,855.8	1.70

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 Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
10,509.0	89.66	163.64	7,348.1	-2,268.9	2,566.3	2,944.8	1.62
10,599.0	89.56	162.69	7,348.7	-2,355.0	2,592.4	3,034.8	1.06
10,688.0	89.70	161.84	7,349.3	-2,439.8	2,619.5	3,123.8	0.97
10,778.0	90.13	161.70	7,349.4	-2,525.3	2,647.7	3,213.8	0.50
10,867.0	89.77	162.93	7,349.5	-2,610.1	2,674.7	3,302.8	1.44
10,957.0	90.10	161.87	7,349.6	-2,695.8	2,701.9	3,392.8	1.23
11,046.0	90.54	162.14	7,349.1	-2,780.5	2,729.4	3,481.8	0.58
11,136.0	89.87	161.40	7,348.8	-2,866.0	2,757.6	3,571.7	1.11
11,226.0	90.13	161.43	7,348.8	-2,951.3	2,786.3	3,661.7	0.29
11,315.0	90.77	162.56	7,348.1	-3,035.9	2,813.8	3,750.7	1.46
11,404.0	90.24	162.22	7,347.3	-3,120.7	2,840.7	3,839.7	0.71
11,494.0	90.24	163.10	7,346.9	-3,206.6	2,867.5	3,929.7	0.98
11,583.0	90.44	162.59	7,346.4	-3,291.7	2,893.8	4,018.7	0.62
11,673.0	89.83	162.51	7,346.2	-3,377.5	2,920.8	4,108.7	0.68
11,763.0	90.57	161.95	7,345.9	-3,463.2	2,948.2	4,198.7	1.03
11,852.0	90.81	162.57	7,344.8	-3,548.0	2,975.3	4,287.7	0.75
11,942.0	91.08	162.90	7,343.3	-3,633.9	3,002.0	4,377.7	0.47
12,032.0	90.54	162.33	7,342.0	-3,719.8	3,028.9	4,467.7	0.87
12,121.0	89.77	160.82	7,341.8	-3,804.3	3,057.1	4,556.7	1.90
12,211.0	89.90	161.43	7,342.1	-3,889.4	3,086.2	4,646.7	0.69
12,300.0	90.23	160.98	7,342.0	-3,973.7	3,114.8	4,735.6	0.63
12,389.0	89.87	161.12	7,341.9	-4,057.8	3,143.7	4,824.6	0.43
12,479.0	90.64	162.44	7,341.5	-4,143.3	3,171.9	4,914.6	1.70
12,568.0	91.04	161.30	7,340.2	-4,227.9	3,199.6	5,003.6	1.36
12,657.0	91.01	163.37	7,338.6	-4,312.7	3,226.6	5,092.6	2.33
12,747.0	89.97	164.07	7,337.8	-4,399.1	3,251.8	5,182.5	1.39
12,836.0	90.37	163.45	7,337.6	-4,484.5	3,276.7	5,271.5	0.83
12,926.0	90.57	162.07	7,336.8	-4,570.5	3,303.4	5,361.5	1.55
13,015.0	91.24	161.55	7,335.4	-4,655.0	3,331.2	5,450.5	0.95
13,105.0	90.50	161.44	7,334.0	-4,740.3	3,359.7	5,540.5	0.83
13,194.0	89.76	162.87	7,333.8	-4,825.1	3,387.0	5,629.5	1.81
13,283.0	89.63	161.61	7,334.3	-4,909.8	3,414.1	5,718.5	1.42
13,373.0	90.67	162.44	7,334.1	-4,995.4	3,441.9	5,808.5	1.48
13,462.0	90.77	162.62	7,333.0	-5,080.3	3,468.6	5,897.5	0.23
13,552.0	91.28	162.04	7,331.4	-5,166.1	3,495.9	5,987.4	0.86
13,641.0	89.40	161.71	7,330.8	-5,250.6	3,523.6	6,076.4	2.14
13,731.0	89.87	161.96	7,331.4	-5,336.1	3,551.7	6,166.4	0.59
13,820.0	90.03	162.69	7,331.5	-5,420.9	3,578.7	6,256.4	0.84
13,910.0	89.53	161.48	7,331.8	-5,506.6	3,606.4	6,346.4	1.45
13,999.0	90.74	163.14	7,331.6	-5,591.4	3,633.3	6,434.4	2.31
14,089.0	89.83	161.79	7,331.2	-5,677.2	3,660.5	6,524.4	1.81
14,179.0	89.40	161.43	7,331.8	-5,762.6	3,688.9	6,614.4	0.62
14,269.0	89.30	162.29	7,332.8	-5,848.1	3,717.0	6,704.4	0.96
14,358.0	90.91	162.67	7,332.6	-5,933.0	3,743.7	6,794.4	0.96

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EOW Completion Report



**Company:** Antero  
**Project:** Doddridge County WV  
**Site:** Hughes Pad:Belton/Carole/Earlewine/Gully/Hugh  
**Well:** Richard Unit 1H  
**Wellbore:** Original Wellpath  
**Design:** As Drilled

**Local Co-ordinate Reference:** Well Richard Unit 1H  
**TVD Reference:** Precision 523: GL 1331' + KB 19' @ 1350.0usft  
**MD Reference:** Precision 523: GL 1331' + KB 19' @ 1350.0usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Oklahoma District

Survey

MD (usft)	Inc (")	Azi (azimuth) (")	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg ("/100usft)
12,292.0	90.67	163.64	7,332.3	-4,249.1	2,511.6	4,813.5	0.69
12,382.0	90.64	162.53	7,331.2	-4,335.2	2,537.8	4,903.5	1.23
12,471.0	90.07	162.17	7,330.7	-4,420.1	2,564.7	4,992.5	0.76
12,561.0	90.97	161.84	7,329.9	-4,505.6	2,592.7	5,082.5	1.16
12,651.0	90.60	161.23	7,328.6	-4,590.9	2,621.3	5,172.5	0.61
12,740.0	90.20	162.18	7,328.0	-4,675.4	2,649.3	5,261.5	1.16
12,830.0	89.93	161.73	7,327.9	-4,761.0	2,677.2	5,351.5	0.58
12,920.0	90.87	161.18	7,327.3	-4,846.3	2,705.8	5,441.5	1.21
13,009.0	90.54	162.09	7,326.2	-4,930.8	2,733.8	5,530.4	1.09
13,099.0	90.10	161.70	7,325.7	-5,016.3	2,761.8	5,620.4	0.65
13,188.0	90.10	163.54	7,325.5	-5,101.2	2,788.4	5,709.4	2.07
13,278.0	90.97	163.06	7,324.7	-5,187.4	2,814.2	5,799.4	1.10
13,368.0	90.67	163.49	7,323.4	-5,273.6	2,840.1	5,889.4	0.58
13,457.0	90.23	161.42	7,322.7	-5,358.5	2,867.0	5,978.4	2.38
13,547.0	91.08	161.58	7,321.7	-5,443.8	2,895.5	6,068.4	0.96
13,637.0	90.67	161.27	7,320.3	-5,529.1	2,924.2	6,158.3	0.57
13,728.0	89.46	159.12	7,320.2	-5,612.8	2,954.3	6,247.3	2.77
13,816.0	90.03	161.23	7,320.6	-5,697.5	2,984.8	6,337.2	2.43
13,905.0	90.54	163.31	7,320.2	-5,782.3	3,011.9	6,426.2	2.41
13,995.0	89.36	161.07	7,320.2	-5,868.0	3,039.5	6,516.2	2.81
14,085.0	90.57	163.65	7,320.3	-5,953.7	3,066.7	6,606.2	3.17
14,174.0	89.76	163.45	7,320.0	-6,039.1	3,091.9	6,695.2	0.94
14,264.0	90.81	162.47	7,319.6	-6,125.1	3,118.3	6,785.2	1.60
14,353.0	88.35	158.14	7,320.2	-6,208.9	3,148.3	6,874.1	5.60
14,443.0	89.50	159.98	7,321.9	-6,292.9	3,180.5	6,963.9	2.41
14,532.0	90.17	161.72	7,322.2	-6,377.0	3,209.7	7,052.9	2.09
14,622.0	90.30	163.30	7,321.8	-6,462.8	3,236.7	7,142.9	1.76
14,711.0	91.35	165.07	7,320.5	-6,548.4	3,261.0	7,231.8	2.31
14,800.0	90.07	162.19	7,319.4	-6,633.8	3,286.0	7,320.8	3.54
14,890.0	89.80	163.52	7,319.5	-6,719.8	3,312.6	7,410.8	1.51
14,979.0	91.71	164.78	7,318.4	-6,805.4	3,336.9	7,499.7	2.57
15,068.0	90.37	162.33	7,318.7	-6,890.8	3,362.1	7,588.7	3.14
15,158.0	89.03	161.05	7,317.2	-6,976.2	3,390.3	7,678.6	2.06
15,247.0	89.90	162.47	7,318.0	-7,060.7	3,418.2	7,767.6	1.87
15,337.0	91.92	163.95	7,316.6	-7,146.9	3,444.2	7,857.6	2.78
15,427.0	91.85	163.82	7,313.7	-7,233.3	3,469.1	7,947.6	3.16
15,516.0	89.29	159.85	7,312.8	-7,317.8	3,496.9	8,036.6	5.31
15,578.0	89.40	160.32	7,313.5	-7,376.1	3,518.9	8,098.4	0.78
15,636.0	89.40	160.32	7,314.1	-7,430.7	3,537.5	8,156.4	0.00

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EOW Completion Report



**Company:** Antero  
**Project:** Doddridge County WV  
**Site:** Hughes Pad: Belton/Carole/Earlewine/Gully/Hugh  
**Well:** Richard Unit 1H  
**Wellbore:** Original Wellpath  
**Design:** As Drilled

**Local Co-ordinate Reference:** Well Richard Unit 1H  
**TVD Reference:** Precision 523: GL 1331' + KB 19' @ 1350.0usft  
**MD Reference:** Precision 523: GL 1331' + KB 19' @ 1350.0usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Oklahoma District

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,189.0	6,995.3	331.5	859.5	Sycamore
7,382.0	7,158.0	301.8	956.7	Middlesex
7,557.0	7,282.5	219.1	1,045.5	Burkett
7,598.0	7,305.2	192.4	1,066.9	Tully
7,738.0	7,354.1	86.4	1,142.6	Hamilton
7,830.0	7,358.9	7.1	1,188.6	Marcellus

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

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