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JUN 08 2015

WV GEOLOGICAL SURVEY  
MORGANTOWN, WV



**Olivia Unit 2H**  
**Doddrige County WV**  
**Northing: 14276955.48**  
**Easting: 1721742.94**  
**As Drilled**

Olivia Unit 2H GL 1381 - 225 RKB @ 1404.0usft  
1381.0

**WELL DETAILS** Olivia Unit 2H  
Ground Level: 1381.0  
Easting: 1721742.9469° 18' 55.766 N00° 42' 44.856 W  
Northing: 14276955.48  
Longitude: 44.856 W

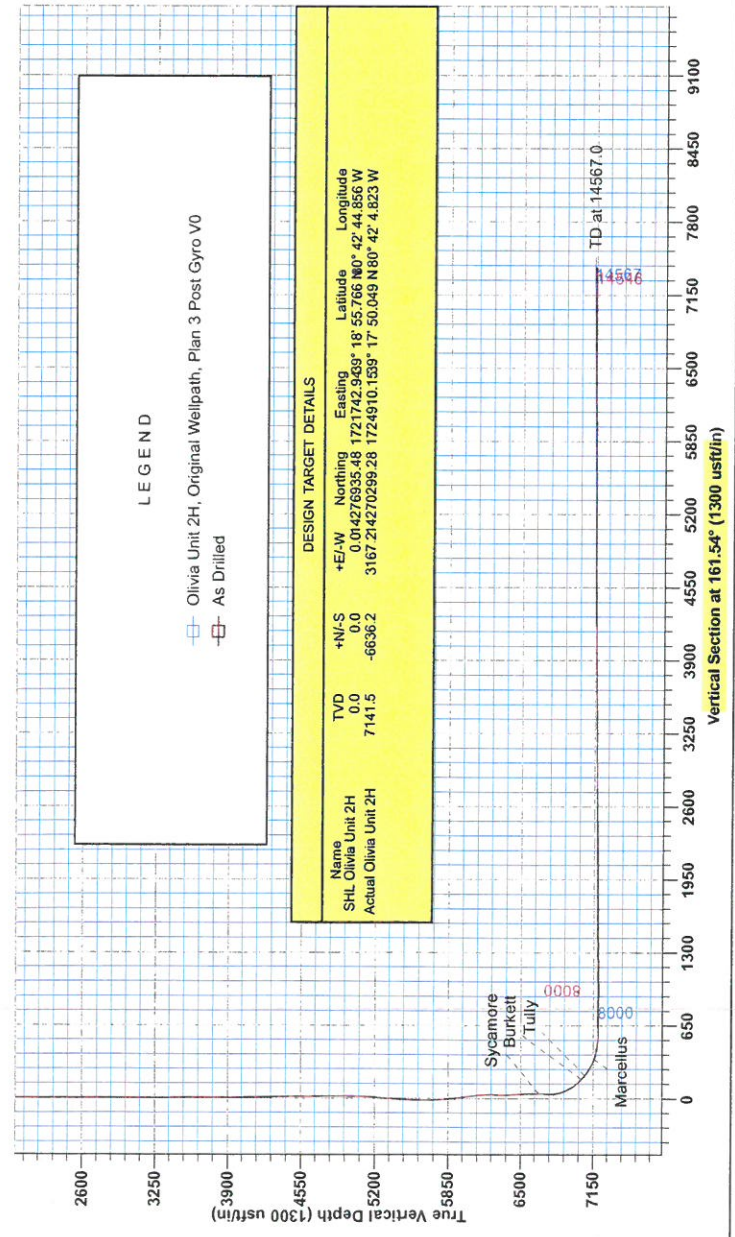
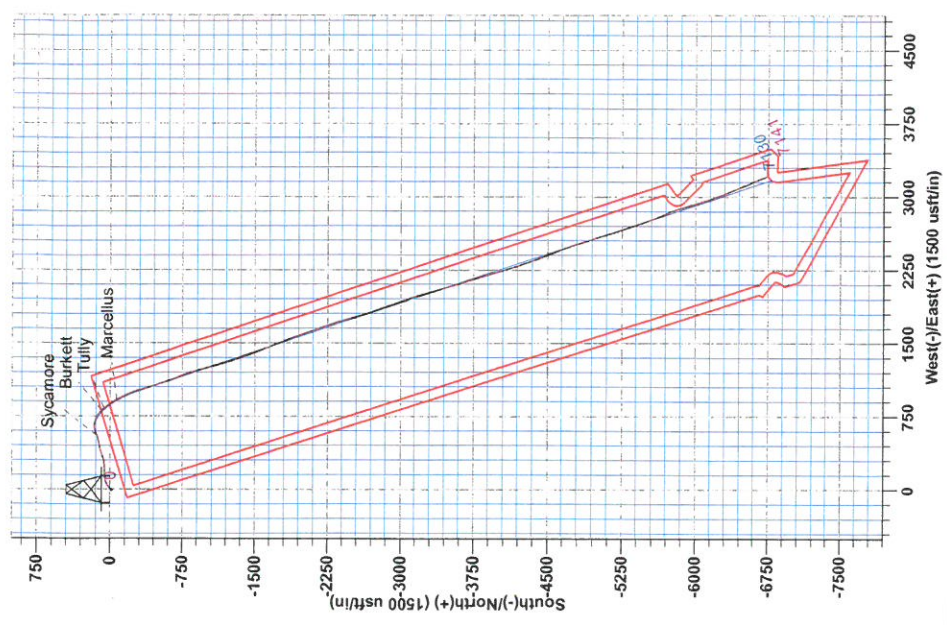
**PROJECT DETAILS:** Doddrige County WV  
Geodetic System: Universal Transverse Mercator (US Survey Feet)  
Datum: NAD 1927 (NADCON CONUS)  
Ellipsoid: Clarke 1866  
Zone: Zone 17N (84 W to 78 W)  
System Datum: Mean Sea Level

Genie Lightfoot  
14-03, April 02 2014  
Scientific Drilling  
421 South Eagle Lane  
Oklahoma City, OK 73128



Azimuths to Grid North  
True North: -0.18°  
Magnetic North: -8.70°  
Magnetic Field  
Strength: 52329.8nT  
Dip Angle: 66.85°  
Date: 3/11/2014  
Model: IGRF2010

To convert Magnetic North to Grid, Subtract 8.70°  
To convert True North to Grid, Subtract 0.18°



**LEGEND**  
□ Olivia Unit 2H, Original Wellpath, Plan 3 Post Gyro VO  
□ As Drilled

**DESIGN TARGET DETAILS**

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL Olivia Unit 2H	0.0	0.0	0.0	14276935.48	1721742.9469°	18° 55' 766 N00° 42' 44.856 W	
Actual Olivia Unit 2H	7141.5	-6636.2	3167.2	14270299.28	1724910.1599°	17° 50.049 N80° 42' 4.823 W	

Vertical Section at 161.54° (1300 usft/in)



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WV GEOLOGICAL SURVEY  
MORGANTOWN, WV

## Antero Resources

Doddridge County WV  
Heflin/McConnell Pad  
Olivia Unit 2H  
Original Wellpath

Design: As Drilled

## EOW Completion Report

02 April, 2014





<b>Company:</b> Antero Resources	<b>Local Co-ordinate Reference:</b> Well Olivia Unit 2H
<b>Project:</b> Doddridge County WV	<b>TVD Reference:</b> Olivia Unit 2H GL 1381 +23' RKB @ 1404.0usft
<b>Site:</b> Heflin/McConnell Pad	<b>MD Reference:</b> Olivia Unit 2H GL 1381 +23' RKB @ 1404.0usft
<b>Well:</b> Olivia 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

<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)		

**Site** Heflin/McConnell Pad

**Site Position:**

<b>From:</b> Map	<b>Northing:</b> 14,276,955.47 usft	<b>Latitude:</b> 39° 18' 55.964 N
<b>Position Uncertainty:</b> 2.0 usft	<b>Easting:</b> 1,721,742.61 usft	<b>Longitude:</b> 80° 42' 44.860 W
	<b>Slot Radius:</b> 13-3/16"	<b>Grid Convergence:</b> 0.18 °

**Well** Olivia Unit 2H

**Well Position**

<b>+N/-S</b> 0.0 usft	<b>Northing:</b> 14,276,935.48 usft	<b>Latitude:</b> 39° 18' 55.766 N
<b>+E/-W</b> 0.0 usft	<b>Easting:</b> 1,721,742.94 usft	<b>Longitude:</b> 80° 42' 44.856 W
<b>Position Uncertainty</b> 2.0 usft	<b>Wellhead Elevation:</b> 1,404.0 usft	<b>Ground Level:</b> 1,381.0 usft

**Wellbore** Original Wellpath

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/11/2014	-8.52	66.85	52,330

**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	161.54

**Survey Program**      **Date** 4/2/2014

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	6,756.9	Survey #5 Final Gyro (Original Wellpath)	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
6,756.9	14,546.0	Survey #6 MWD (Original Wellpath)	MWD SDI	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
100.0	0.46	161.05	100.0	-0.4	0.1	0.4	0.46
200.0	0.25	159.48	200.0	-1.0	0.3	1.0	0.21
300.0	0.28	175.23	300.0	-1.4	0.4	1.5	0.08
400.0	0.15	177.31	400.0	-1.8	0.5	1.8	0.13
500.0	0.19	180.16	500.0	-2.1	0.5	2.1	0.04
600.0	0.06	235.05	600.0	-2.3	0.4	2.3	0.16
700.0	0.09	244.37	700.0	-2.3	0.3	2.3	0.03
800.0	0.14	228.95	800.0	-2.5	0.1	2.4	0.06
900.0	0.09	192.62	900.0	-2.6	0.0	2.5	0.09
1,000.0	0.07	248.12	1,000.0	-2.7	0.0	2.6	0.08



EOW Completion Report



**Company:** Antero Resources  
**Project:** Doddridge County WV  
**Site:** Heflin/McConnell Pad  
**Well:** Olivia Unit 2H  
**Wellbore:** Original Wellpath  
**Design:** As Drilled

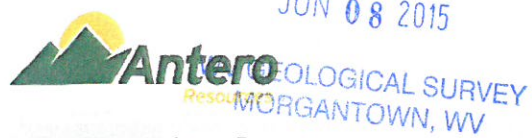
**Local Co-ordinate Reference:** Well Olivia Unit 2H  
**TVD Reference:** Olivia Unit 2H GL 1381 +23' RKB @ 1404.0usft  
**MD Reference:** Olivia Unit 2H GL 1381 +23' RKB @ 1404.0usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
1,100.0	0.04	105.91	1,100.0	-2.7	-0.1	2.6	0.10
1,200.0	0.15	253.57	1,200.0	-2.8	-0.2	2.6	0.19
1,300.0	0.08	252.45	1,300.0	-2.8	-0.3	2.6	0.07
1,400.0	0.28	248.98	1,400.0	-3.0	-0.6	2.6	0.20
1,500.0	0.18	246.06	1,500.0	-3.1	-1.0	2.6	0.10
1,600.0	0.29	251.31	1,600.0	-3.3	-1.4	2.6	0.11
1,700.0	0.13	254.02	1,700.0	-3.4	-1.7	2.6	0.16
1,800.0	0.15	269.94	1,800.0	-3.4	-2.0	2.6	0.04
1,900.0	0.27	269.73	1,900.0	-3.4	-2.3	2.5	0.12
2,000.0	0.28	246.79	2,000.0	-3.5	-2.8	2.4	0.11
2,100.0	0.13	250.76	2,100.0	-3.6	-3.1	2.4	0.15
2,200.0	0.16	269.86	2,200.0	-3.7	-3.4	2.4	0.06
2,300.0	0.18	256.24	2,300.0	-3.7	-3.7	2.4	0.04
2,400.0	0.24	238.47	2,400.0	-3.9	-4.0	2.4	0.09
2,500.0	0.11	267.87	2,500.0	-4.0	-4.3	2.4	0.15
2,600.0	0.24	266.63	2,600.0	-4.0	-4.6	2.3	0.13
2,700.0	0.42	251.88	2,700.0	-4.1	-5.1	2.3	0.20
2,800.0	0.38	245.32	2,800.0	-4.4	-5.8	2.3	0.06
2,900.0	0.37	238.90	2,900.0	-4.7	-6.4	2.4	0.04
3,000.0	0.40	235.93	3,000.0	-5.0	-6.9	2.6	0.04
3,100.0	0.33	242.37	3,100.0	-5.4	-7.5	2.7	0.08
3,200.0	0.53	241.63	3,200.0	-5.7	-8.1	2.8	0.20
3,300.0	0.55	241.78	3,300.0	-6.2	-9.0	3.0	0.02
3,400.0	0.57	224.30	3,400.0	-6.7	-9.7	3.3	0.17
3,500.0	0.59	234.05	3,500.0	-7.4	-10.5	3.7	0.10
3,600.0	0.44	219.82	3,600.0	-8.0	-11.2	4.0	0.20
3,700.0	0.62	219.70	3,699.9	-8.7	-11.8	4.5	0.18
3,800.0	0.42	212.05	3,799.9	-9.4	-12.3	5.1	0.21
3,900.0	0.60	210.51	3,899.9	-10.2	-12.8	5.6	0.18
4,000.0	0.51	196.15	3,999.9	-11.1	-13.2	6.3	0.16
4,100.0	0.57	177.43	4,099.9	-12.0	-13.3	7.2	0.19
4,200.0	0.90	185.37	4,199.9	-13.3	-13.3	8.4	0.34
4,300.0	0.88	170.60	4,299.9	-14.8	-13.3	9.9	0.23
4,400.0	0.91	160.29	4,399.9	-16.3	-12.9	11.4	0.16
4,500.0	0.75	173.12	4,499.9	-17.7	-12.5	12.8	0.24
4,600.0	0.79	152.13	4,599.9	-19.0	-12.1	14.2	0.28
4,700.0	0.80	142.17	4,699.9	-20.1	-11.4	15.5	0.14
4,800.0	0.62	157.81	4,799.9	-21.2	-10.7	16.7	0.26
4,900.0	0.53	165.41	4,899.9	-22.1	-10.4	17.7	0.12
5,000.0	0.26	85.25	4,999.9	-22.6	-10.1	18.2	0.55
5,100.0	5.32	33.23	5,099.7	-18.7	-7.3	15.4	5.16
5,200.0	9.10	33.42	5,198.9	-8.2	-0.4	7.6	3.78
5,300.0	8.71	42.32	5,297.7	4.0	9.1	-0.9	1.43
5,400.0	10.43	51.62	5,396.3	15.2	21.2	-7.7	2.31

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EOW Completion Report



**Company:** Antero Resources  
**Project:** Doddridge County WV  
**Site:** Heflin/McConnell Pad  
**Well:** Olivia Unit 2H  
**Wellbore:** Original Wellpath  
**Design:** As Drilled

**Local Co-ordinate Reference:** Well Olivia Unit 2H  
**TVD Reference:** Olivia Unit 2H GL 1381 +23' RKB @ 1404.0usft  
**MD Reference:** Olivia Unit 2H GL 1381 +23' RKB @ 1404.0usft  
**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)
5,500.0	15.48	56.56	5,493.7	28.2	39.5	-14.3	5.17
5,600.0	15.78	71.55	5,590.1	39.9	63.5	-17.7	4.04
5,700.0	18.09	71.79	5,685.7	49.0	91.2	-17.6	2.31
5,800.0	18.95	85.97	5,780.6	55.0	122.1	-13.5	4.57
5,900.0	20.91	82.96	5,874.6	58.4	156.1	-5.9	2.21
6,000.0	22.73	94.65	5,967.5	59.0	193.0	5.2	4.70
6,100.0	27.06	87.11	6,058.2	58.6	235.0	18.9	5.36
6,200.0	31.44	79.03	6,145.5	64.7	283.4	28.4	5.89
6,300.0	29.16	71.34	6,231.8	77.4	332.1	31.7	4.50
6,400.0	25.47	67.67	6,320.7	93.4	375.1	30.2	4.05
6,500.0	26.54	78.95	6,410.6	105.9	417.0	31.6	5.05
6,600.0	29.38	78.05	6,498.9	115.2	462.9	37.3	2.87
6,700.0	31.23	72.44	6,585.3	128.1	511.6	40.5	3.38
6,756.9	29.02	70.20	6,634.5	137.3	538.7	40.4	4.36
6,797.0	26.73	65.78	6,669.9	144.3	556.1	39.2	7.69
<b>Sycamore</b>							
6,829.0	26.11	65.05	6,698.6	150.2	569.0	37.7	2.19
6,892.0	29.64	69.99	6,754.3	161.4	596.2	35.7	6.69
6,923.0	31.36	77.42	6,781.0	165.7	611.3	36.3	13.36
6,955.0	32.99	83.68	6,808.1	168.5	628.1	39.0	11.59
6,985.0	35.58	87.85	6,832.9	169.7	644.9	43.2	11.65
7,017.0	36.87	94.79	6,858.7	169.3	663.8	49.6	13.43
7,048.0	37.87	100.19	6,883.3	166.8	682.5	57.8	11.05
7,080.0	38.74	107.12	6,908.5	162.1	701.7	68.4	13.69
7,112.0	40.00	113.37	6,933.2	155.1	720.7	81.1	13.00
7,144.0	41.06	118.65	6,957.5	146.0	739.4	95.6	11.22
7,176.0	41.64	124.14	6,981.6	135.0	757.4	111.8	11.48
7,209.0	43.42	129.76	7,005.9	121.6	775.2	130.1	12.71
7,240.0	46.17	133.20	7,027.9	107.1	791.6	149.1	11.82
7,272.0	49.23	136.49	7,049.4	90.4	808.3	170.2	12.23
<b>Burkett</b>							
7,273.0	49.33	136.59	7,050.1	89.9	808.8	170.9	12.23
7,305.0	52.33	139.63	7,070.3	71.4	825.4	193.6	11.92
7,319.0	54.25	140.03	7,078.7	62.8	832.6	204.1	13.90
<b>Tully</b>							
7,337.0	56.72	140.51	7,088.9	51.4	842.1	217.9	13.90
7,369.0	60.68	141.89	7,105.5	30.1	859.2	243.5	12.91
7,402.0	63.69	143.99	7,120.9	6.8	876.8	271.2	10.72
7,433.0	66.63	147.41	7,133.9	-16.4	892.7	298.2	13.79
7,465.0	70.29	150.45	7,145.7	-41.9	908.0	327.3	14.45
7,491.0	72.01	152.30	7,154.1	-63.5	919.8	351.5	9.42
<b>Marcellus</b>							
7,498.0	72.47	152.79	7,156.2	-69.4	922.9	358.1	9.42
7,529.0	75.70	153.80	7,164.7	-96.1	936.3	387.6	10.88
7,561.0	78.74	155.29	7,171.8	-124.2	949.7	418.6	10.53

<b>Company:</b> Antero Resources	<b>Local Co-ordinate Reference:</b> Well Olivia Unit 2H
<b>Project:</b> Doddridge County WV	<b>TVD Reference:</b> Olivia Unit 2H GL 1381 +23' RKB @ 1404.0usft
<b>Site:</b> Heflin/McConnell Pad	<b>MD Reference:</b> Olivia Unit 2H GL 1381 +23' RKB @ 1404.0usft
<b>Well:</b> Olivia 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)
7,593.0	80.45	156.41	7,177.6	-153.0	962.5	449.9	6.36
7,625.0	81.07	155.81	7,182.7	-181.8	975.3	481.3	2.68
7,657.0	82.66	156.54	7,187.2	-210.8	988.1	512.9	5.46
7,689.0	84.18	159.15	7,190.9	-240.3	1,000.1	544.6	9.39
7,764.0	90.54	163.76	7,194.3	-311.2	1,023.9	619.4	10.47
7,858.0	90.97	165.01	7,193.1	-401.8	1,049.2	713.3	1.41
7,954.0	87.78	161.19	7,194.2	-493.6	1,077.1	809.2	5.18
8,049.0	90.23	159.87	7,195.8	-583.1	1,108.8	904.2	2.93
8,149.0	90.54	159.50	7,195.1	-676.9	1,143.5	1,004.1	0.48
8,238.0	91.01	161.81	7,193.9	-760.9	1,173.0	1,093.1	2.65
8,332.0	89.93	162.94	7,193.2	-850.4	1,201.4	1,187.1	1.66
8,426.0	91.94	165.96	7,191.6	-941.0	1,226.6	1,281.0	3.86
8,516.0	90.10	163.84	7,190.0	-1,027.8	1,250.1	1,370.8	3.12
8,607.0	90.47	164.24	7,189.6	-1,115.3	1,275.1	1,461.7	0.60
8,697.0	90.50	162.84	7,188.8	-1,201.6	1,300.6	1,551.6	1.56
8,788.0	90.81	161.62	7,187.8	-1,288.3	1,328.3	1,642.6	1.38
8,878.0	90.40	160.62	7,186.8	-1,373.4	1,357.5	1,732.6	1.20
8,968.0	90.84	159.89	7,185.8	-1,458.1	1,387.9	1,822.6	0.95
9,058.0	90.50	159.13	7,184.8	-1,542.4	1,419.4	1,912.5	0.93
9,149.0	90.54	158.63	7,184.0	-1,627.3	1,452.2	2,003.4	0.55
9,240.0	90.47	157.66	7,183.2	-1,711.8	1,486.0	2,094.2	1.07
9,332.0	90.61	158.77	7,182.3	-1,797.2	1,520.2	2,186.1	1.22
9,423.0	90.70	158.59	7,181.2	-1,882.0	1,553.3	2,277.0	0.22
9,514.0	91.58	161.89	7,179.4	-1,967.6	1,584.0	2,367.9	3.75
9,609.0	90.27	159.85	7,177.9	-2,057.3	1,615.1	2,462.9	2.55
9,703.0	91.14	161.33	7,176.7	-2,146.0	1,646.4	2,556.9	1.83
9,798.0	91.54	160.82	7,174.5	-2,235.8	1,677.2	2,651.8	0.68
9,893.0	91.44	163.17	7,172.1	-2,326.1	1,706.5	2,746.8	2.48
9,989.0	89.08	163.13	7,171.6	-2,418.0	1,734.4	2,842.7	2.46
10,084.0	90.74	163.62	7,171.8	-2,509.0	1,761.5	2,937.7	1.82
10,179.0	91.41	164.54	7,170.0	-2,600.4	1,787.6	3,032.6	1.20
10,273.0	90.71	162.22	7,168.2	-2,690.4	1,814.5	3,126.5	2.58
10,368.0	90.17	159.94	7,167.5	-2,780.3	1,845.3	3,221.5	2.47
10,462.0	90.24	160.39	7,167.2	-2,868.7	1,877.2	3,315.5	0.48
10,556.0	90.81	159.36	7,166.3	-2,956.9	1,909.5	3,409.4	1.25
10,651.0	91.45	160.57	7,164.4	-3,046.2	1,942.0	3,504.4	1.44
10,747.0	90.57	162.88	7,162.8	-3,137.3	1,972.1	3,600.3	2.57
10,843.0	91.51	163.31	7,161.0	-3,229.1	2,000.0	3,696.3	1.08
10,937.0	89.73	163.28	7,160.0	-3,319.2	2,027.1	3,790.2	1.89
11,033.0	89.80	165.05	7,160.4	-3,411.5	2,053.3	3,886.1	1.85
11,128.0	90.37	163.68	7,160.2	-3,503.0	2,078.9	3,981.0	1.56
11,223.0	90.57	163.44	7,159.5	-3,594.1	2,105.7	4,076.0	0.33
11,318.0	90.71	163.91	7,158.4	-3,685.3	2,132.4	4,170.9	0.52
11,413.0	91.71	163.41	7,156.4	-3,776.4	2,159.2	4,265.8	1.18



**Company:** Antero Resources  
**Project:** Doddridge County WV  
**Site:** Heflin/McConnell Pad  
**Well:** Olivia Unit 2H  
**Wellbore:** Original Wellpath  
**Design:** As Drilled

**Local Co-ordinate Reference:** Well Olivia Unit 2H  
**TVD Reference:** Olivia Unit 2H GL 1381 +23' RKB @ 1404.0usft  
**MD Reference:** Olivia Unit 2H GL 1381 +23' RKB @ 1404.0usft  
**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)
11,509.0	89.56	161.81	7,155.3	-3,868.0	2,187.9	4,361.8	2.79
11,604.0	89.80	162.76	7,155.9	-3,958.5	2,216.8	4,456.8	1.03
11,698.0	89.80	161.96	7,156.2	-4,048.1	2,245.2	4,550.7	0.85
11,794.0	91.28	164.11	7,155.3	-4,139.9	2,273.3	4,646.7	2.72
11,889.0	89.36	161.15	7,154.8	-4,230.6	2,301.6	4,741.7	3.71
11,985.0	89.80	160.24	7,155.5	-4,321.2	2,333.4	4,837.6	1.05
12,080.0	90.07	158.40	7,155.6	-4,410.0	2,366.9	4,932.6	1.96
12,175.0	89.97	158.54	7,155.5	-4,498.4	2,401.8	5,027.4	0.18
12,270.0	90.37	158.78	7,155.3	-4,586.9	2,436.3	5,122.3	0.49
12,365.0	90.47	160.39	7,154.6	-4,675.9	2,469.5	5,217.3	1.70
12,460.0	90.81	161.47	7,153.5	-4,765.7	2,500.5	5,312.2	1.19
12,552.0	89.87	160.89	7,153.0	-4,852.8	2,530.2	5,404.2	1.20
12,647.0	89.66	162.12	7,153.3	-4,942.9	2,560.3	5,499.2	1.31
12,741.0	90.80	162.73	7,153.0	-5,032.5	2,588.7	5,593.2	1.38
12,836.0	90.07	162.20	7,152.2	-5,123.1	2,617.3	5,688.2	0.95
12,930.0	90.17	161.42	7,152.0	-5,212.4	2,646.7	5,782.2	0.84
13,025.0	90.30	161.92	7,151.7	-5,302.5	2,676.5	5,877.2	0.54
13,120.0	90.57	161.70	7,150.9	-5,392.8	2,706.2	5,972.2	0.37
13,214.0	90.77	159.96	7,149.8	-5,481.6	2,737.1	6,066.2	1.86
13,309.0	89.56	156.63	7,149.6	-5,569.8	2,772.2	6,161.0	3.73
13,405.0	90.81	156.78	7,149.3	-5,658.0	2,810.2	6,256.7	1.31
13,499.0	91.95	159.57	7,147.0	-5,745.2	2,845.1	6,350.5	3.21
13,595.0	91.17	161.73	7,144.4	-5,835.7	2,876.9	6,446.4	2.39
13,689.0	91.95	163.12	7,141.8	-5,925.3	2,905.3	6,540.4	1.70
13,784.0	90.37	162.06	7,139.9	-6,016.0	2,933.7	6,635.3	2.00
13,880.0	90.03	161.86	7,139.6	-6,107.2	2,963.4	6,731.3	0.41
13,975.0	88.99	159.41	7,140.4	-6,196.8	2,994.9	6,826.3	2.80
14,069.0	90.07	159.61	7,141.1	-6,284.9	3,027.8	6,920.2	1.17
14,163.0	90.27	159.34	7,140.9	-6,372.9	3,060.8	7,014.2	0.36
14,259.0	89.39	158.13	7,141.1	-6,462.4	3,095.6	7,110.1	1.56
14,354.0	89.83	157.62	7,141.8	-6,550.4	3,131.3	7,204.9	0.71
14,447.0	90.54	157.02	7,141.5	-6,636.2	3,167.2	7,297.6	1.00
14,487.0	90.17	156.08	7,141.2	-6,672.9	3,183.1	7,337.4	2.53
14,546.0	90.10	158.00	7,141.1	-6,727.2	3,206.1	7,396.3	3.26



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**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)	
6,797.0	6,669.9	144.3	556.1	Sycamore
7,272.0	7,049.4	90.4	808.3	Burkett
7,319.0	7,078.7	62.8	832.6	Tully
7,491.0	7,154.1	-63.5	919.8	Marcellus

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

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JUN 08 2015

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MORGANTOWN, WV