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WV GEOLOGICAL SURVEY

MORGANTOWN, WV



Antero Resources
Olivia Unit 1H
Doddridge County WV
Northing: 14276915.49
Easting: 1721743.27
As Drilled

REFERENCE INFORMATION

Coordinates: UTM
 Vertical (VD) Reference: Frank3, 1985, CL, + 22 KID @ 1404.0out
 Horizontal (HD) Reference: State Plane, NAD 83, Zone 17N, 64 W to 78 W
 Meters
 Calculation Method: Minimum Curvature

PROJECT DETAILS: Doddridge County WV

Geoidetic System: Universal Transverse Mercator (US Survey Feet)
 Zone: 17N (64 W to 78 W)
 System Datum: Mean Sea Level



Scientific Drilling
 10:16, October 17 2014
 Genie Lightfoot
 Scientific Drilling
 421 South Eagle Lane
 Oklahoma City, OK

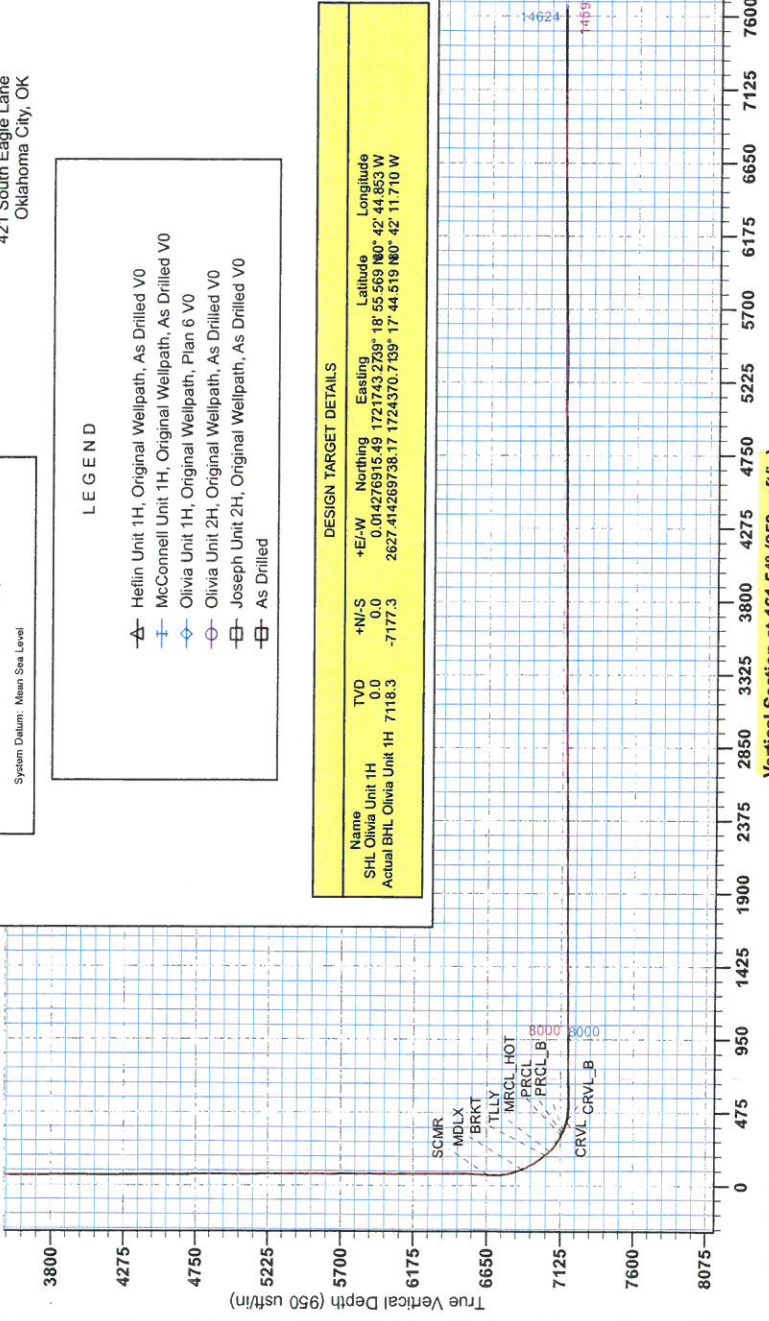
WELL DETAILS: Olivia Unit 1H
 Ground Level: 1381.0
 Slot
 Northing: 14276915.49
 Easting: 1721743.27
 Longitude: 80° 42' 44.853 W
 Latitude: 39° 18' 35.869 N

LEGEND

- ▲ Helin Unit 1H, Original Wellpath, As Drilled V0
- ◆ McConnell Unit 1H, Original Wellpath, As Drilled V0
- ◇ Olivia Unit 1H, Original Wellpath, Plan 6 V0
- Olivia Unit 2H, Original Wellpath, As Drilled V0
- ⊖ Joseph Unit 2H, Original Wellpath, As Drilled V0
- As Drilled

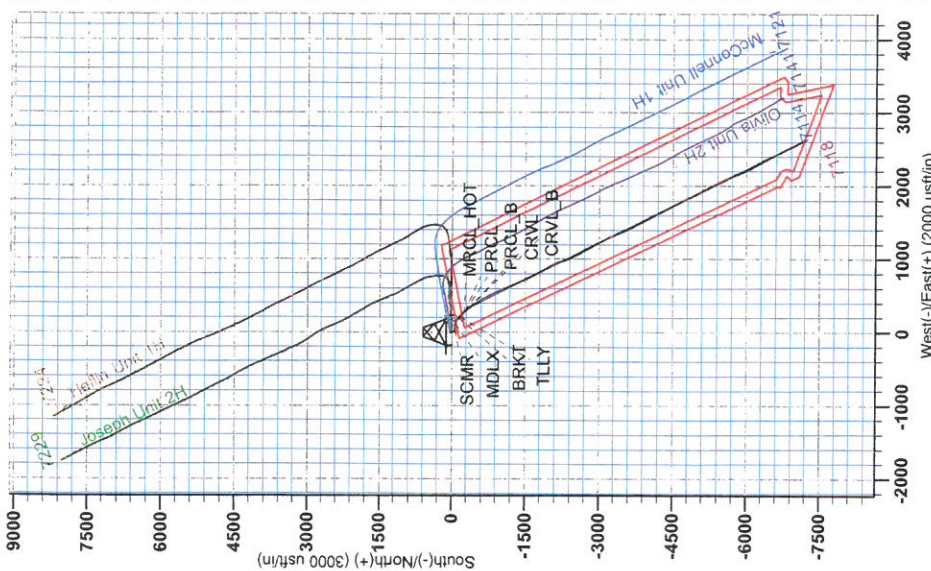
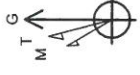
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL Olivia Unit 1H	0.0	0.0	0.0	0,014276915.49	1721743.2739	18° 55' 569 N00° 42' 44.853 W	
Actual BHL Olivia Unit 1H	7118.3	-7177.3	2627.414269738.17	1724370.709°	17° 44' 519 N00° 42' 11.710 W		



To convert Magnetic North to Grid, Subtract 8.71°
 To convert True North to Grid, Subtract 0.18°

Magnetic Field
 Strength: 52230 Zerst
 Dip Angle: 66.86°
 Date: 9/11/2014
 Model: BOGM2014





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Antero Resources

**Doddridge County WV
Heflin/McConnell Pad
Olivia Unit 1H
Original Wellpath**

Design: As Drilled

EOW Completion Report

17 October, 2014



JUN 08 2015



EOW Completion Report



Company: Antero Resources	Local Co-ordinate Reference: Well Olivia Unit 1H
Project: Doddridge County WV	TVD Reference: Frontier 3: 1381' GL + 23' KB @ 1404.0usft
Site: Heflin/McConnell Pad	MD Reference: Frontier 3: 1381' GL + 23' KB @ 1404.0usft
Well: Olivia Unit 1H	North Reference: Grid
Wellbore: Original Wellpath	Survey Calculation Method: Minimum Curvature
Design: As Drilled	Database: Oklahoma District

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

Site Heflin/McConnell Pad

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

Well Olivia Unit 1H, Marcellus

Well Position	+N/-S 0.0 usft	Northing: 14,276,915.49 usft	Latitude: 39° 18' 55.569 N
	+E/-W 0.0 usft	Easting: 1,721,743.27 usft	Longitude: 80° 42' 44.853 W
Position Uncertainty	2.0 usft	Wellhead Elevation: 1,404.0 usft	Ground Level: 1,381.0 usft

Wellbore Original Wellpath

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	9/11/2014	-8.53	66.86	52,230

Design As Drilled

Audit Notes:

Version: 1.0	Phase: ACTUAL	Tie On Depth: 0.0
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Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	161.54

Survey Program Date 10/17/2014

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
25.0	6,321.0	Survey #6 Final Gyro to KOP (Original We	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
6,336.0	14,591.0	Survey #7 MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. 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
25.0	0.07	78.81	25.0	0.0	0.0	0.0	0.28
50.0	0.14	78.81	50.0	0.0	0.1	0.0	0.28
75.0	0.20	78.81	75.0	0.0	0.1	0.0	0.24
100.0	0.25	76.08	100.0	0.0	0.2	0.0	0.20
125.0	0.23	80.07	125.0	0.1	0.3	0.0	0.10
150.0	0.20	88.40	150.0	0.1	0.4	0.1	0.17
175.0	0.17	77.53	175.0	0.1	0.5	0.1	0.18
200.0	0.12	99.36	200.0	0.1	0.6	0.1	0.29
225.0	0.08	92.14	225.0	0.1	0.6	0.1	0.17
250.0	0.08	82.80	250.0	0.1	0.6	0.1	0.05



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 MORGANTOWN, WV

EOW Completion Report



Company: Antero Resources
Project: Doddridge County WV
Site: Heflin/McConnell Pad
Well: Olivia Unit 1H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Olivia Unit 1H
TVD Reference: Frontier 3: 1381' GL + 23' KB @ 1404.0usft
MD Reference: Frontier 3: 1381' GL + 23' KB @ 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)
275.0	0.15	94.20	275.0	0.1	0.7	0.1	0.29
300.0	0.13	74.12	300.0	0.1	0.8	0.1	0.21
325.0	0.14	82.92	325.0	0.1	0.8	0.2	0.09
350.0	0.16	80.96	350.0	0.1	0.9	0.2	0.08
375.0	0.18	85.28	375.0	0.1	0.9	0.2	0.09
400.0	0.15	115.57	400.0	0.1	1.0	0.2	0.36
425.0	0.16	108.20	425.0	0.1	1.1	0.3	0.09
450.0	0.18	136.19	450.0	0.0	1.1	0.3	0.34
475.0	0.18	119.98	475.0	0.0	1.2	0.4	0.20
500.0	0.20	98.92	500.0	0.0	1.3	0.4	0.29
525.0	0.24	112.81	525.0	-0.1	1.4	0.5	0.27
550.0	0.25	111.06	550.0	-0.1	1.5	0.6	0.05
575.0	0.23	129.59	575.0	-0.1	1.6	0.6	0.32
600.0	0.24	136.52	600.0	-0.2	1.6	0.7	0.12
625.0	0.20	126.31	625.0	-0.3	1.7	0.8	0.22
650.0	0.15	111.45	650.0	-0.3	1.8	0.9	0.27
675.0	0.22	102.81	675.0	-0.3	1.8	0.9	0.30
700.0	0.25	114.34	700.0	-0.4	1.9	1.0	0.22
725.0	0.26	117.31	725.0	-0.4	2.0	1.0	0.07
750.0	0.29	113.80	750.0	-0.5	2.2	1.1	0.14
775.0	0.26	118.16	775.0	-0.5	2.3	1.2	0.15
800.0	0.23	119.61	800.0	-0.6	2.4	1.3	0.12
825.0	0.22	126.45	825.0	-0.6	2.4	1.4	0.11
850.0	0.69	158.80	850.0	-0.8	2.5	1.6	2.07
875.0	1.66	163.43	875.0	-1.3	2.7	2.1	3.90
900.0	2.30	165.56	900.0	-2.1	2.9	2.9	2.58
925.0	2.40	166.79	925.0	-3.1	3.2	4.0	0.45
950.0	3.52	169.04	949.9	-4.4	3.4	5.2	4.50
975.0	4.31	170.12	974.9	-6.1	3.7	6.9	3.17
1,000.0	4.74	169.39	999.8	-8.0	4.1	8.9	1.74
1,025.0	4.98	169.16	1,024.7	-10.1	4.5	11.0	0.96
1,050.0	6.01	169.40	1,049.6	-12.4	4.9	13.3	4.12
1,075.0	6.33	169.21	1,074.4	-15.1	5.4	16.0	1.28
1,100.0	6.29	168.47	1,099.3	-17.8	6.0	18.7	0.36
1,125.0	6.59	168.37	1,124.1	-20.5	6.5	21.5	1.20
1,150.0	6.45	169.62	1,149.0	-23.3	7.1	24.3	0.80
1,175.0	6.53	169.20	1,173.8	-26.1	7.6	27.1	0.37
1,200.0	6.59	168.77	1,198.6	-28.9	8.1	30.0	0.31
1,225.0	5.93	169.15	1,223.5	-31.6	8.6	32.7	2.65
1,250.0	4.17	169.63	1,248.4	-33.7	9.1	34.8	7.04
1,275.0	3.92	170.50	1,273.3	-35.5	9.4	36.6	1.03
1,300.0	3.70	170.18	1,298.3	-37.1	9.6	38.2	0.88
1,325.0	3.29	170.80	1,323.2	-38.6	9.9	39.7	1.65
1,350.0	3.15	172.21	1,348.2	-40.0	10.1	41.1	0.64

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EOW Completion Report



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Project: Doddridge County WV
Site: Heflin/McConnell Pad
Well: Olivia Unit 1H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Olivia Unit 1H
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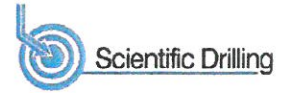
Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
1,375.0	2.96	171.73	1,373.2	-41.3	10.3	42.4	0.77
1,400.0	2.66	173.79	1,398.1	-42.5	10.4	43.6	1.27
1,425.0	2.41	173.37	1,423.1	-43.6	10.6	44.7	1.00
1,450.0	2.32	173.29	1,448.1	-44.6	10.7	45.7	0.36
1,475.0	2.16	176.49	1,473.1	-45.6	10.8	46.7	0.81
1,500.0	2.01	176.78	1,498.0	-46.5	10.8	47.6	0.60
1,525.0	1.78	176.99	1,523.0	-47.3	10.9	48.4	0.92
1,550.0	1.67	177.86	1,548.0	-48.1	10.9	49.1	0.45
1,575.0	1.61	178.38	1,573.0	-48.8	10.9	49.8	0.25
1,600.0	1.56	175.76	1,598.0	-49.5	11.0	50.4	0.35
1,625.0	1.31	175.46	1,623.0	-50.1	11.0	51.0	1.00
1,650.0	1.20	178.39	1,648.0	-50.7	11.0	51.6	0.51
1,675.0	1.03	172.51	1,673.0	-51.2	11.1	52.0	0.82
1,700.0	0.91	173.21	1,698.0	-51.6	11.1	52.5	0.48
1,725.0	0.96	175.22	1,723.0	-52.0	11.2	52.8	0.24
1,750.0	0.98	180.38	1,748.0	-52.4	11.2	53.3	0.36
1,775.0	0.87	181.52	1,773.0	-52.8	11.2	53.6	0.45
1,800.0	0.81	182.67	1,798.0	-53.2	11.2	54.0	0.25
1,825.0	0.75	185.13	1,823.0	-53.5	11.1	54.3	0.27
1,850.0	0.73	184.18	1,848.0	-53.8	11.1	54.6	0.09
1,875.0	0.65	180.25	1,873.0	-54.1	11.1	54.9	0.37
1,900.0	0.47	167.27	1,898.0	-54.4	11.1	55.1	0.88
1,925.0	0.54	183.92	1,923.0	-54.6	11.1	55.3	0.65
1,950.0	0.46	192.20	1,948.0	-54.8	11.1	55.5	0.43
1,975.0	0.49	174.10	1,972.9	-55.0	11.1	55.7	0.61
2,000.0	0.41	173.67	1,997.9	-55.2	11.1	55.9	0.32
2,025.0	0.45	169.80	2,022.9	-55.4	11.1	56.1	0.20
2,050.0	0.41	172.03	2,047.9	-55.6	11.2	56.3	0.17
2,075.0	0.42	170.47	2,072.9	-55.8	11.2	56.4	0.06
2,100.0	0.33	170.53	2,097.9	-55.9	11.2	56.6	0.36
2,125.0	0.37	161.28	2,122.9	-56.1	11.3	56.8	0.28
2,150.0	0.39	165.70	2,147.9	-56.2	11.3	56.9	0.14
2,175.0	0.28	160.14	2,172.9	-56.4	11.4	57.1	0.46
2,200.0	0.30	154.53	2,197.9	-56.5	11.4	57.2	0.14
2,225.0	0.41	166.26	2,222.9	-56.6	11.5	57.3	0.53
2,250.0	0.32	138.66	2,247.9	-56.8	11.5	57.5	0.78
2,275.0	0.30	148.12	2,272.9	-56.9	11.6	57.6	0.22
2,300.0	0.34	144.90	2,297.9	-57.0	11.7	57.8	0.18
2,325.0	0.27	158.53	2,322.9	-57.1	11.7	57.9	0.40
2,350.0	0.34	154.73	2,347.9	-57.2	11.8	58.0	0.29
2,375.0	0.35	163.63	2,372.9	-57.4	11.9	58.2	0.22
2,400.0	0.21	157.66	2,397.9	-57.5	11.9	58.3	0.57
2,425.0	0.31	168.17	2,422.9	-57.6	11.9	58.4	0.44
2,450.0	0.37	141.98	2,447.9	-57.7	12.0	58.6	0.66
2,475.0	0.31	150.79	2,472.9	-57.9	12.1	58.7	0.32

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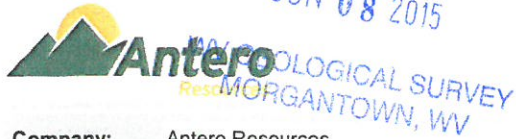
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2,500.0	0.21	165.82	2,497.9	-58.0	12.1	58.8	0.48
2,525.0	0.34	158.26	2,522.9	-58.1	12.2	58.9	0.54
2,550.0	0.33	164.43	2,547.9	-58.2	12.2	59.1	0.15
2,575.0	0.29	175.54	2,572.9	-58.3	12.2	59.2	0.29
2,600.0	0.30	189.42	2,597.9	-58.5	12.2	59.3	0.29
2,625.0	0.30	203.66	2,622.9	-58.6	12.2	59.4	0.30
2,650.0	0.35	209.87	2,647.9	-58.7	12.1	59.5	0.24
2,675.0	0.32	232.69	2,672.9	-58.8	12.0	59.6	0.54
2,700.0	0.35	211.11	2,697.9	-58.9	11.9	59.7	0.52
2,725.0	0.39	212.27	2,722.9	-59.1	11.8	59.8	0.16
2,750.0	0.45	212.51	2,747.9	-59.2	11.7	59.9	0.24
2,775.0	0.42	221.60	2,772.9	-59.4	11.6	60.0	0.30
2,800.0	0.34	230.40	2,797.9	-59.5	11.5	60.1	0.40
2,825.0	0.45	221.95	2,822.9	-59.6	11.4	60.2	0.50
2,850.0	0.36	221.09	2,847.9	-59.7	11.3	60.2	0.36
2,875.0	0.39	232.90	2,872.9	-59.9	11.2	60.3	0.33
2,900.0	0.38	235.38	2,897.9	-60.0	11.0	60.4	0.08
2,925.0	0.47	214.16	2,922.9	-60.1	10.9	60.4	0.72
2,950.0	0.39	217.89	2,947.9	-60.2	10.8	60.6	0.34
2,975.0	0.35	210.57	2,972.9	-60.4	10.7	60.7	0.25
3,000.0	0.44	223.17	2,997.9	-60.5	10.6	60.7	0.50
3,025.0	0.50	225.00	3,022.9	-60.7	10.4	60.8	0.25
3,050.0	0.42	220.45	3,047.9	-60.8	10.3	60.9	0.35
3,075.0	0.36	225.54	3,072.9	-60.9	10.2	61.0	0.28
3,100.0	0.38	223.95	3,097.9	-61.0	10.1	61.1	0.09
3,125.0	0.35	214.94	3,122.9	-61.2	10.0	61.2	0.26
3,150.0	0.37	214.98	3,147.9	-61.3	9.9	61.3	0.08
3,175.0	0.42	214.24	3,172.9	-61.4	9.8	61.4	0.20
3,200.0	0.38	228.07	3,197.9	-61.6	9.7	61.5	0.42
3,225.0	0.39	219.91	3,222.9	-61.7	9.6	61.5	0.22
3,250.0	0.44	219.58	3,247.9	-61.8	9.4	61.6	0.20
3,275.0	0.44	228.89	3,272.9	-62.0	9.3	61.7	0.29
3,300.0	0.42	213.85	3,297.9	-62.1	9.2	61.8	0.46
3,325.0	0.45	202.01	3,322.9	-62.3	9.1	61.9	0.38
3,350.0	0.47	216.63	3,347.9	-62.4	9.0	62.1	0.47
3,375.0	0.40	213.47	3,372.9	-62.6	8.9	62.2	0.30
3,400.0	0.52	210.72	3,397.9	-62.8	8.8	62.3	0.49
3,425.0	0.53	217.63	3,422.9	-63.0	8.7	62.5	0.26
3,450.0	0.52	223.77	3,447.9	-63.1	8.5	62.6	0.23
3,475.0	0.49	218.06	3,472.9	-63.3	8.4	62.7	0.23
3,500.0	0.63	222.73	3,497.9	-63.5	8.2	62.8	0.59
3,525.0	0.59	221.29	3,522.9	-63.7	8.0	62.9	0.17
3,550.0	0.59	221.85	3,547.9	-63.9	7.9	63.1	0.02
3,575.0	0.61	227.39	3,572.9	-64.1	7.7	63.2	0.25

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EOW Completion Report



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Project: Doddridge County WV
Site: Heflin/McConnell Pad
Well: Olivia Unit 1H
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Design: As Drilled

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Database: Oklahoma District

Survey

Table with 10 columns: MD (usft), Inc (°), Azi (azimuth) (°), TVD (usft), N/S (usft), E/W (usft), V. Sec (usft), DLeg (°/100usft). Contains 40 rows of survey data.

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GEOLOGICAL SURVEY
MORGANTOWN, WV

EOW Completion Report



Company: Antero Resources
Project: Doddridge County WV
Site: Heflin/McConnell Pad
Well: Olivia Unit 1H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Olivia Unit 1H
TVD Reference: Frontier 3: 1381' GL + 23' KB @ 1404.0usft
MD Reference: Frontier 3: 1381' GL + 23' KB @ 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)
4,700.0	0.46	219.29	4,697.9	-71.5	-0.2	67.8	0.60
4,725.0	0.37	214.50	4,722.9	-71.6	-0.3	67.9	0.39
4,750.0	0.30	232.45	4,747.9	-71.8	-0.4	67.9	0.50
4,775.0	0.38	214.63	4,772.9	-71.9	-0.5	68.0	0.53
4,800.0	0.41	213.08	4,797.9	-72.0	-0.6	68.1	0.13
4,825.0	0.44	201.29	4,822.9	-72.2	-0.6	68.3	0.37
4,850.0	0.30	237.21	4,847.9	-72.3	-0.7	68.3	1.06
4,875.0	0.38	214.73	4,872.9	-72.4	-0.8	68.4	0.62
4,900.0	0.29	225.53	4,897.9	-72.5	-0.9	68.5	0.44
4,925.0	0.32	230.29	4,922.9	-72.6	-1.0	68.5	0.16
4,950.0	0.26	218.86	4,947.9	-72.7	-1.1	68.6	0.33
4,975.0	0.27	199.13	4,972.9	-72.8	-1.2	68.7	0.37
5,000.0	0.21	190.00	4,997.9	-72.9	-1.2	68.8	0.28
5,025.0	0.24	185.51	5,022.9	-73.0	-1.2	68.8	0.14
5,050.0	0.21	197.18	5,047.9	-73.1	-1.2	68.9	0.22
5,075.0	0.31	205.59	5,072.9	-73.2	-1.3	69.0	0.43
5,100.0	0.32	175.64	5,097.9	-73.3	-1.3	69.1	0.65
5,125.0	0.38	166.62	5,122.9	-73.5	-1.3	69.3	0.33
5,150.0	0.30	181.55	5,147.9	-73.6	-1.3	69.4	0.47
5,175.0	0.33	188.58	5,172.8	-73.7	-1.3	69.6	0.20
5,200.0	0.27	187.83	5,197.8	-73.9	-1.3	69.7	0.24
5,225.0	0.36	204.19	5,222.8	-74.0	-1.3	69.8	0.51
5,250.0	0.31	186.59	5,247.8	-74.1	-1.4	69.9	0.46
5,275.0	0.47	173.69	5,272.8	-74.3	-1.4	70.1	0.73
5,300.0	0.36	184.75	5,297.8	-74.5	-1.4	70.2	0.54
5,325.0	0.33	190.22	5,322.8	-74.6	-1.4	70.4	0.18
5,350.0	0.44	185.87	5,347.8	-74.8	-1.4	70.5	0.45
5,375.0	0.41	199.25	5,372.8	-75.0	-1.4	70.7	0.41
5,400.0	0.35	196.14	5,397.8	-75.1	-1.5	70.8	0.25
5,425.0	0.43	203.78	5,422.8	-75.3	-1.5	70.9	0.38
5,450.0	0.45	193.53	5,447.8	-75.5	-1.6	71.1	0.32
5,475.0	0.46	205.21	5,472.8	-75.7	-1.7	71.3	0.37
5,500.0	0.49	205.09	5,497.8	-75.9	-1.8	71.4	0.12
5,525.0	0.45	195.60	5,522.8	-76.1	-1.8	71.6	0.35
5,550.0	0.37	218.44	5,547.8	-76.2	-1.9	71.7	0.72
5,575.0	0.46	216.76	5,572.8	-76.4	-2.0	71.8	0.36
5,600.0	0.46	203.86	5,597.8	-76.5	-2.1	71.9	0.41
5,625.0	0.48	220.35	5,622.8	-76.7	-2.2	72.0	0.54
5,650.0	0.44	209.54	5,647.8	-76.9	-2.3	72.2	0.38
5,675.0	0.38	228.16	5,672.8	-77.0	-2.5	72.3	0.58
5,700.0	0.40	231.45	5,697.8	-77.1	-2.6	72.3	0.12
5,725.0	0.37	230.61	5,722.8	-77.2	-2.7	72.4	0.12
5,750.0	0.28	243.00	5,747.8	-77.3	-2.8	72.4	0.45
5,775.0	0.40	215.00	5,772.8	-77.4	-2.9	72.5	0.81



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EOW Completion Report



GEOLOGICAL SURVEY
MORGANTOWN, WV

Company: Antero Resources
Project: Doddridge County WV
Site: Heflin/McConnell Pad
Well: Olivia Unit 1H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Olivia Unit 1H
TVD Reference: Frontier 3: 1381' GL + 23' KB @ 1404.0usft
MD Reference: Frontier 3: 1381' GL + 23' KB @ 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)
5,800.0	0.54	234.02	5,797.8	-77.5	-3.1	72.6	0.83
5,825.0	0.39	237.67	5,822.8	-77.7	-3.2	72.6	0.61
5,850.0	0.39	238.11	5,847.8	-77.7	-3.4	72.7	0.01
5,875.0	0.45	212.09	5,872.8	-77.9	-3.5	72.7	0.79
5,900.0	0.35	227.72	5,897.8	-78.0	-3.6	72.8	0.59
5,925.0	0.37	223.39	5,922.8	-78.1	-3.7	72.9	0.14
5,950.0	0.36	213.81	5,947.8	-78.2	-3.8	73.0	0.25
5,975.0	0.36	202.94	5,972.8	-78.4	-3.9	73.1	0.27
6,000.0	0.32	214.85	5,997.8	-78.5	-4.0	73.2	0.32
6,025.0	0.35	217.22	6,022.8	-78.6	-4.1	73.3	0.13
6,050.0	0.34	221.76	6,047.8	-78.7	-4.2	73.4	0.12
6,075.0	0.39	205.18	6,072.8	-78.9	-4.2	73.5	0.47
6,100.0	0.27	225.16	6,097.8	-79.0	-4.3	73.6	0.66
6,125.0	0.31	218.33	6,122.8	-79.1	-4.4	73.6	0.21
6,150.0	0.21	199.31	6,147.8	-79.2	-4.5	73.7	0.52
6,175.0	0.30	198.56	6,172.8	-79.3	-4.5	73.8	0.36
6,200.0	0.36	186.23	6,197.8	-79.4	-4.5	73.9	0.37
6,225.0	0.33	193.74	6,222.8	-79.6	-4.6	74.0	0.22
6,250.0	0.42	202.84	6,247.8	-79.7	-4.6	74.2	0.43
6,275.0	0.43	196.25	6,272.8	-79.9	-4.7	74.3	0.20
6,300.0	0.44	186.06	6,297.8	-80.1	-4.7	74.5	0.31
6,321.0	0.50	183.52	6,318.8	-80.3	-4.7	74.6	0.30
6,336.0	0.32	169.34	6,333.8	-80.4	-4.7	74.7	1.37
6,399.0	0.26	202.61	6,396.8	-80.7	-4.7	75.0	0.28
6,431.0	0.38	192.60	6,428.8	-80.8	-4.8	75.2	0.41
6,462.0	0.47	119.47	6,459.8	-81.0	-4.7	75.3	1.65
6,494.0	3.67	71.69	6,491.8	-80.7	-3.6	75.4	10.54
6,526.0	7.77	64.99	6,523.6	-79.5	-0.7	75.2	12.96
6,558.0	11.39	58.62	6,555.2	-77.0	4.0	74.2	11.77
6,589.0	13.55	57.93	6,585.4	-73.4	9.7	72.7	6.98
6,621.0	15.79	58.51	6,616.4	-69.2	16.6	70.8	7.01
6,653.0	18.67	61.12	6,647.0	-64.4	24.8	68.9	9.32
6,665.0	19.54	61.79	6,658.3	-62.5	28.2	68.3	7.50
SCMR							
6,684.0	20.93	62.74	6,676.1	-59.5	34.0	67.2	7.50
6,714.0	20.65	70.25	6,704.2	-55.2	43.8	66.3	8.93
6,746.0	20.85	83.84	6,734.1	-52.7	54.7	67.3	15.03
6,777.0	21.59	95.12	6,763.0	-52.6	65.9	70.8	13.36
6,808.0	22.85	102.86	6,791.7	-54.5	77.5	76.2	10.27
6,840.0	24.81	109.11	6,821.0	-58.1	89.9	83.5	9.98
6,871.0	26.77	116.14	6,848.9	-63.3	102.3	92.4	11.71
6,902.0	28.89	119.95	6,876.3	-70.1	115.0	102.9	8.92
6,907.0	29.20	120.84	6,880.7	-71.3	117.1	104.7	10.60
MDLX							
6,934.0	30.96	125.34	6,904.1	-78.7	128.5	115.3	10.60

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EOW Completion Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Olivia Unit 1H
Project:	Doddridge County WV	TVD Reference:	Frontier 3: 1381' GL + 23' KB @ 1404.0usft
Site:	Heflin/McConnell Pad	MD Reference:	Frontier 3: 1381' GL + 23' KB @ 1404.0usft
Well:	Olivia Unit 1H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
6,965.0	33.15	126.56	6,930.4	-88.4	141.8	128.7	7.37
6,997.0	35.44	130.41	6,956.8	-99.6	155.9	143.8	9.85
7,029.0	38.08	134.41	6,982.4	-112.5	170.0	160.6	11.13
7,060.0	40.74	138.65	7,006.4	-126.8	183.5	178.4	12.20
7,091.0	43.54	141.45	7,029.4	-142.8	196.9	197.7	10.88
BRKT							
7,123.0	47.12	144.19	7,051.9	-160.9	210.6	219.3	12.74
7,130.0	48.04	144.25	7,056.6	-165.1	213.6	224.2	13.14
TLLY							
7,154.0	51.19	144.45	7,072.1	-179.9	224.3	241.7	13.14
7,186.0	54.36	143.76	7,091.5	-200.6	239.2	266.0	10.05
7,217.0	56.79	146.22	7,109.0	-221.5	253.9	290.5	10.21
7,248.0	60.41	148.59	7,125.2	-243.8	268.1	316.2	13.38
7,260.0	61.92	148.95	7,131.0	-252.8	273.6	326.4	12.88
MRCL_HOT							
7,273.0	63.56	149.33	7,136.9	-262.7	279.5	337.7	12.88
PRCL							
7,279.0	64.32	149.50	7,139.5	-267.4	282.2	343.0	12.88
7,291.0	65.58	149.85	7,144.6	-276.8	287.7	353.6	10.82
PRCL_B							
7,311.0	67.68	150.42	7,152.6	-292.7	296.9	371.6	10.82
7,342.0	72.92	151.97	7,163.0	-318.2	310.9	400.3	17.55
7,353.0	74.70	152.33	7,166.1	-327.6	315.8	410.7	16.48
CRVL							
7,370.0	77.45	152.86	7,170.2	-342.2	323.4	427.0	16.48
CRVL_B							
7,374.0	78.10	152.99	7,171.0	-345.7	325.2	430.9	16.48
7,420.0	86.44	153.57	7,177.2	-386.4	345.7	476.0	18.17
7,451.0	89.52	154.80	7,178.3	-414.3	359.2	506.7	10.70
7,461.0	90.04	154.62	7,178.3	-423.3	363.4	516.6	5.50
7,483.0	90.13	154.89	7,178.3	-443.2	372.8	538.5	1.29
7,514.0	90.92	155.41	7,178.0	-471.3	385.9	569.3	3.05
7,546.0	91.63	155.77	7,177.3	-500.5	399.1	601.1	2.49
7,640.0	91.54	157.52	7,174.7	-586.7	436.3	694.7	1.86
7,734.0	90.57	159.28	7,173.0	-674.1	470.9	788.5	2.14
7,829.0	89.16	162.97	7,173.2	-764.0	501.6	883.5	4.16
7,924.0	89.96	162.36	7,173.9	-854.7	530.0	978.5	1.06
8,019.0	91.10	164.99	7,173.0	-945.8	556.7	1,073.4	3.02
8,112.0	91.19	163.59	7,171.2	-1,035.3	581.8	1,166.3	1.51
8,208.0	90.92	164.75	7,169.4	-1,127.7	608.0	1,262.2	1.24
8,302.0	90.57	163.50	7,168.2	-1,218.1	633.7	1,356.1	1.38
8,397.0	89.78	164.29	7,167.9	-1,309.3	660.1	1,451.0	1.18
8,491.0	90.84	162.45	7,167.4	-1,399.4	687.0	1,544.9	2.26
8,584.0	90.48	163.06	7,166.3	-1,488.2	714.5	1,637.9	0.76
8,678.0	90.84	160.95	7,165.2	-1,577.6	743.6	1,731.9	2.28



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Site: Heflin/McConnell Pad
Well: Olivia Unit 1H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Olivia Unit 1H
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MD Reference: Frontier 3: 1381' GL + 23' KB @ 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)
8,773.0	91.28	159.28	7,163.5	-1,666.9	775.9	1,826.8	1.82
8,868.0	89.16	160.07	7,163.1	-1,756.0	808.9	1,921.8	2.38
8,963.0	90.57	161.48	7,163.3	-1,845.7	840.2	2,016.8	2.10
9,053.0	90.40	157.61	7,162.6	-1,930.0	871.6	2,106.7	4.30
9,144.0	89.69	158.84	7,162.5	-2,014.5	905.4	2,197.5	1.56
9,234.0	90.31	163.76	7,162.5	-2,099.7	934.2	2,287.5	5.51
9,324.0	91.01	168.86	7,161.5	-2,187.1	955.5	2,377.2	5.72
9,415.0	90.66	166.66	7,160.1	-2,276.1	974.8	2,467.6	2.45
9,506.0	91.19	165.61	7,158.7	-2,364.4	996.6	2,558.3	1.29
9,596.0	90.84	162.36	7,157.1	-2,450.9	1,021.4	2,648.2	3.63
9,686.0	90.84	160.86	7,155.8	-2,536.3	1,049.8	2,738.2	1.67
9,776.0	90.31	160.78	7,154.9	-2,621.3	1,079.4	2,828.2	0.60
9,867.0	90.48	159.72	7,154.2	-2,706.9	1,110.1	2,919.1	1.18
9,957.0	90.75	158.05	7,153.3	-2,790.9	1,142.5	3,009.0	1.88
10,047.0	89.96	158.75	7,152.7	-2,874.5	1,175.7	3,098.9	1.17
10,143.0	90.57	160.16	7,152.3	-2,964.4	1,209.4	3,194.8	1.60
10,237.0	90.57	159.90	7,151.3	-3,052.8	1,241.5	3,288.8	0.28
10,332.0	90.13	160.69	7,150.7	-3,142.2	1,273.5	3,383.8	0.95
10,427.0	90.40	162.45	7,150.3	-3,232.3	1,303.5	3,478.8	1.87
10,522.0	90.22	162.36	7,149.8	-3,322.9	1,332.2	3,573.8	0.21
10,615.0	89.69	165.26	7,149.9	-3,412.2	1,358.2	3,666.7	3.17
10,710.0	91.01	167.81	7,149.3	-3,504.6	1,380.3	3,761.3	3.02
10,804.0	90.66	162.80	7,147.9	-3,595.5	1,404.1	3,855.1	5.34
10,899.0	90.13	162.62	7,147.3	-3,686.2	1,432.4	3,950.0	0.59
10,994.0	90.57	160.78	7,146.7	-3,776.3	1,462.2	4,045.0	1.99
11,088.0	90.57	158.84	7,145.7	-3,864.6	1,494.6	4,139.0	2.06
11,183.0	90.22	159.37	7,145.1	-3,953.3	1,528.5	4,233.9	0.67
11,277.0	90.13	158.84	7,144.8	-4,041.1	1,562.0	4,327.8	0.57
11,373.0	90.48	159.63	7,144.3	-4,130.9	1,596.1	4,423.7	0.90
11,467.0	91.01	162.01	7,143.1	-4,219.7	1,626.9	4,517.7	2.59
11,563.0	90.40	160.95	7,141.9	-4,310.7	1,657.4	4,613.7	1.27
11,657.0	89.60	160.60	7,141.9	-4,399.4	1,688.4	4,707.7	0.93
11,751.0	89.34	160.34	7,142.8	-4,488.0	1,719.8	4,801.7	0.39
11,846.0	91.19	162.53	7,142.3	-4,578.1	1,750.0	4,896.6	3.02
11,938.0	91.28	162.18	7,140.3	-4,665.7	1,777.9	4,988.6	0.39
12,032.0	89.43	160.86	7,139.7	-4,754.9	1,807.7	5,082.6	2.42
12,126.0	89.52	163.15	7,140.6	-4,844.3	1,836.8	5,176.6	2.44
12,222.0	89.25	161.22	7,141.6	-4,935.6	1,866.1	5,272.6	2.03
12,316.0	90.04	160.42	7,142.2	-5,024.4	1,897.0	5,366.6	1.20
12,411.0	90.04	158.67	7,142.2	-5,113.4	1,930.2	5,461.5	1.84
12,506.0	91.63	159.19	7,140.8	-5,202.1	1,964.4	5,556.4	1.76
12,601.0	91.45	159.81	7,138.2	-5,291.0	1,997.6	5,651.3	0.68
12,696.0	91.80	161.13	7,135.5	-5,380.5	2,029.4	5,746.2	1.44
12,791.0	90.84	162.53	7,133.3	-5,470.8	2,059.0	5,841.2	1.79

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EOW Completion Report



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Project: Doddridge County WV
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MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
12,885.0	89.60	163.59	7,133.0	-5,560.7	2,086.4	5,935.2	1.74
12,980.0	90.57	163.24	7,132.8	-5,651.7	2,113.5	6,030.1	1.09
13,075.0	91.01	165.70	7,131.5	-5,743.2	2,138.9	6,125.0	2.63
13,170.0	89.87	164.99	7,130.8	-5,835.1	2,162.9	6,219.8	1.41
13,265.0	91.45	164.03	7,129.7	-5,926.7	2,188.3	6,314.6	1.95
13,360.0	91.19	162.62	7,127.5	-6,017.7	2,215.6	6,409.6	1.51
13,454.0	90.92	159.02	7,125.8	-6,106.4	2,246.4	6,503.5	3.84
13,546.0	91.45	158.05	7,123.9	-6,192.0	2,280.1	6,595.4	1.20
13,640.0	91.54	159.55	7,121.4	-6,279.6	2,314.1	6,689.2	1.60
13,734.0	89.34	159.37	7,120.7	-6,367.6	2,347.0	6,783.2	2.35
13,829.0	89.52	161.83	7,121.6	-6,457.2	2,378.6	6,878.1	2.60
13,924.0	90.48	161.57	7,121.6	-6,547.4	2,408.4	6,973.1	1.05
14,018.0	90.22	161.30	7,121.1	-6,636.5	2,438.4	7,067.1	0.40
14,113.0	89.87	161.74	7,121.0	-6,726.6	2,468.5	7,162.1	0.59
14,208.0	90.22	160.78	7,120.9	-6,816.6	2,499.0	7,257.1	1.08
14,302.0	90.84	161.48	7,120.1	-6,905.5	2,529.4	7,351.1	0.99
14,396.0	91.10	161.30	7,118.5	-6,994.6	2,559.4	7,445.1	0.34
14,492.0	89.69	159.19	7,117.8	-7,084.9	2,591.8	7,541.1	2.64
14,533.0	89.70	158.85	7,118.0	-7,123.2	2,606.5	7,582.0	0.83
14,591.0	89.70	158.85	7,118.3	-7,177.3	2,627.4	7,640.0	0.00

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
6,665.0	6,658.3	-62.5	28.2	SCMR
6,907.0	6,880.7	-71.3	117.1	MDLX
7,091.0	7,029.4	-142.8	196.9	BRKT
7,130.0	7,056.6	-165.1	213.6	TLLY
7,260.0	7,131.0	-252.8	273.6	MRCL_HOT
7,273.0	7,136.9	-262.7	279.5	PRCL
7,291.0	7,144.6	-276.8	287.7	PRCL_B
7,353.0	7,166.1	-327.6	315.8	CRVL
7,370.0	7,170.2	-342.2	323.4	CRVL_B

Checked By: _____ Approved By: _____ Date: _____