

RECEIVED

JUN 01 2015

WV GEOLOGICAL SURVEY
MORGANTOWN, WV



Antero Resources
Costlow Unit 2H
Doddridge County WV
Northing: 14295223.06
Easting: 1715891.05
As Drilled

WELL DETAILS: Costlow Unit 2H

+N/S +E/W Northing Easting
0.0 0.0 14295223.06 1715891.05

Ground Level 998.0
Localside 43° 58' 52.7" W
Slat

PROJECT DETAILS: Doddridge 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

REFERENCE INFORMATION

Coordinate Reference: Well Center UTM 2H, Grid North
Magnetic North: 8.67°
Magnetic Field Strength: 524.167 nT
Dip Angle: 66.83°
Date: 12/26/2013
Model: IGRF2010

Genie Lightfoot
13:47, November 08 2013
Scientific Drilling
421 South Eagle Lane
Oklahoma City, OK

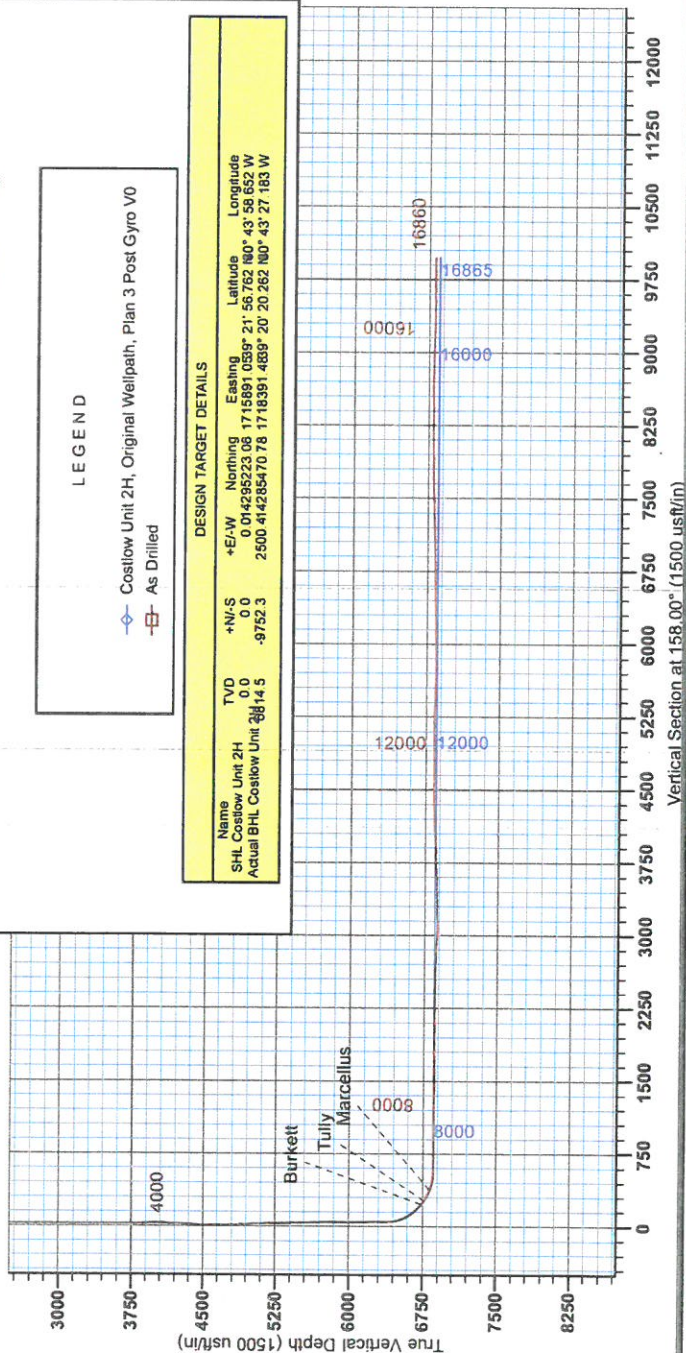


LEGEND

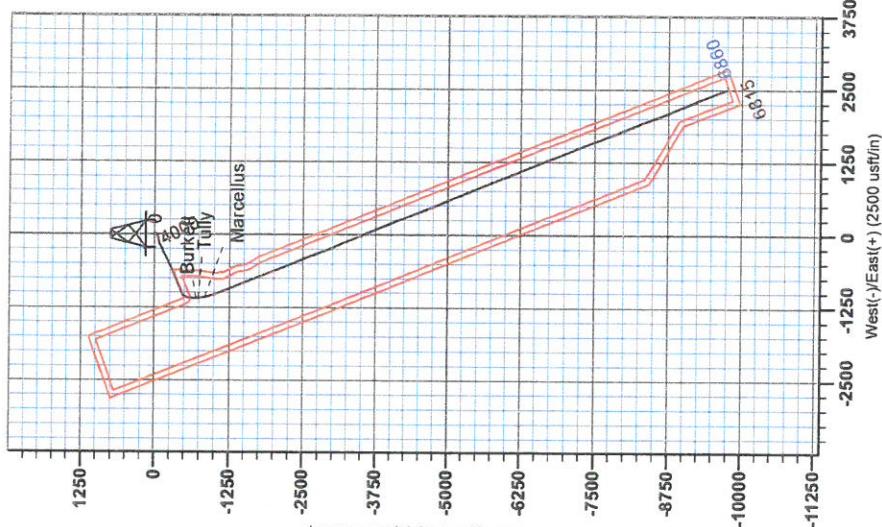
— Costlow Unit 2H, Original Wellpath, Plan 3 Post Gyro V0
— As Drilled

DESIGN TARGET DETAILS

Name	TVD	+N/S	+E/W	Northing	Easting	Latitude	Longitude
SHL Costlow Unit 2H	0.0	0.0	0.0	14295223.06	1715891.05	21° 56' 762.80"	43° 58' 52.7" W
Actual BHL Costlow Unit 2H	3814.5	-9752.3	2500.8	42285470.78	1718391.48	20° 20' 262.80"	43° 27' 183.7" W



To convert Magnetic North to Grid, Subtract 8.67°
To convert True North to Grid, Subtract 0.17°





RECEIVED
JUN 01 2015
WV GEOLOGICAL SURVEY
MORGANTOWN, WV

Antero Resources

Doddridge County WV
Costlow/Duff/Mishka
Costlow Unit 2H
Original Wellpath

Design: As Drilled

EOW Completion Report

08 November, 2013





WV GEOLOGICAL SURVEY
MORGANTOWN, WV
LOG Completion Report



Company: Antero Resources	Local Co-ordinate Reference: Well Costlow Unit 2H
Project: Doddridge County WV	TVD Reference: Costlow Unit 2H GL' 996+19' RKB @ 1015.0usft
Site: Costlow/Duff/Mishka	MD Reference: Costlow Unit 2H GL' 996+19' RKB @ 1015.0usft
Well: Costlow Unit 2H	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	Costlow/Duff/Mishka				
Site Position:		Northing:	14,295,223.06 usft	Latitude:	39° 21' 56.762 N
From:	Map	Easting:	1,715,891.05 usft	Longitude:	80° 43' 58.652 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.17 °

Well	Costlow Unit 2H					
Well Position	+N/-S	0.0 usft	Northing:	14,295,223.06 usft	Latitude:	39° 21' 56.762 N
	+E/-W	0.0 usft	Easting:	1,715,891.05 usft	Longitude:	80° 43' 58.652 W
Position Uncertainty	2.0 usft		Wellhead Elevation:	1,015.0 usft	Ground Level:	996.0 usft

Wellbore	Original Wellpath				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/26/2013	-8.50	66.93	52,417

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	158.00	

Survey Program	Date 11/8/2013				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	3,620.0	Survey #1 Gyro (Original Wellpath)	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper	
3,747.0	16,860.0	Survey #2 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
	100.0	0.62	164.10	100.0	-0.5	0.1	0.5	0.62
	200.0	0.46	174.28	200.0	-1.4	0.3	1.5	0.19
	300.0	0.26	149.72	300.0	-2.0	0.5	2.1	0.25
	400.0	0.05	228.12	400.0	-2.3	0.6	2.3	0.25
	500.0	0.13	124.28	500.0	-2.4	0.6	2.4	0.15
	600.0	0.26	136.62	600.0	-2.6	0.9	2.7	0.14
	700.0	0.46	133.07	700.0	-3.0	1.3	3.3	0.20
	800.0	0.39	135.45	800.0	-3.5	1.9	4.0	0.07
	900.0	0.42	147.84	900.0	-4.1	2.3	4.7	0.09
	1,000.0	0.62	143.82	1,000.0	-4.8	2.8	5.5	0.20

Company: Antero Resources
 Project: Doddridge County WV
 Site: Costlow/Duff/Mishka
 Well: Costlow Unit 2H
 Wellbore: Original Wellpath
 Design: As Drilled

Local Co-ordinate Reference: Well Costlow Unit 2H
 TVD Reference: Costlow Unit 2H GL' 996+19' RKB @ 1015.0usft
 MD Reference: Costlow Unit 2H GL' 996+19' RKB @ 1015.0usft
 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	0.52	142.17	1,100.0	-5.6	3.4	6.5	0.10
1,200.0	0.48	143.69	1,200.0	-6.3	3.9	7.3	0.04
1,300.0	0.48	137.70	1,300.0	-7.0	4.5	8.1	0.05
1,400.0	0.43	149.54	1,400.0	-7.6	4.9	8.9	0.11
1,500.0	0.58	141.37	1,500.0	-8.3	5.4	9.8	0.17
1,600.0	0.50	139.37	1,600.0	-9.1	6.0	10.7	0.08
1,700.0	0.64	141.24	1,700.0	-9.8	6.7	11.6	0.14
1,800.0	0.73	139.19	1,799.9	-10.7	7.4	12.7	0.09
1,900.0	0.68	148.72	1,899.9	-11.7	8.2	13.9	0.13
2,000.0	0.73	147.14	1,999.9	-12.8	8.8	15.1	0.05
2,100.0	0.68	147.71	2,099.9	-13.8	9.5	16.4	0.05
2,200.0	0.68	145.71	2,199.9	-14.8	10.1	17.5	0.02
2,300.0	0.62	151.92	2,299.9	-15.8	10.7	18.6	0.09
2,400.0	0.51	159.66	2,399.9	-16.7	11.1	19.6	0.13
2,500.0	0.51	159.36	2,499.9	-17.5	11.4	20.5	0.00
2,600.0	0.37	163.40	2,599.9	-18.2	11.7	21.3	0.14
2,700.0	0.27	161.53	2,699.9	-18.8	11.9	21.8	0.10
2,800.0	0.17	221.41	2,799.9	-19.1	11.8	22.1	0.24
2,900.0	0.28	282.28	2,899.9	-19.1	11.5	22.1	0.25
3,000.0	0.36	267.95	2,999.9	-19.1	11.0	21.8	0.11
3,100.0	0.30	237.92	3,099.9	-19.3	10.4	21.8	0.18
3,200.0	0.29	241.88	3,199.9	-19.5	10.0	21.8	0.02
3,300.0	0.33	238.92	3,299.9	-19.8	9.5	21.9	0.04
3,400.0	0.29	256.30	3,399.9	-20.0	9.0	21.9	0.10
3,500.0	0.18	244.90	3,499.9	-20.1	8.6	21.9	0.12
3,600.0	0.24	267.04	3,599.9	-20.2	8.3	21.8	0.10
3,620.0	0.21	271.24	3,619.9	-20.2	8.2	21.8	0.17
3,751.0	4.32	228.42	3,750.8	-23.5	4.3	23.4	3.18
3,775.2	5.12	228.40	3,774.9	-24.8	2.8	24.0	3.31
3,800.8	6.23	230.70	3,800.4	-26.4	0.8	24.8	4.42
3,825.9	7.23	232.77	3,825.2	-28.2	-1.5	25.6	4.11
3,850.6	7.85	235.47	3,849.8	-30.1	-4.1	26.4	2.88
3,875.3	8.46	238.13	3,874.2	-32.1	-7.0	27.1	2.91
3,900.5	8.68	239.14	3,899.1	-34.0	-10.2	27.7	1.06
3,925.0	8.84	239.53	3,923.4	-35.9	-13.5	28.3	0.69
3,950.8	8.93	239.79	3,948.8	-37.9	-16.9	28.8	0.38
3,976.0	8.91	239.22	3,973.8	-39.9	-20.3	29.4	0.36
4,000.6	9.11	241.47	3,998.0	-41.8	-23.6	29.9	1.65
4,025.9	9.75	247.95	4,023.0	-43.6	-27.4	30.2	4.89
4,050.7	10.32	253.04	4,047.4	-45.0	-31.4	30.0	4.25
4,075.3	11.18	256.52	4,071.6	-46.2	-35.8	29.4	4.38
4,100.2	12.02	257.77	4,095.9	-47.3	-40.7	28.6	3.53
4,125.0	12.43	258.06	4,120.2	-48.4	-45.9	27.7	1.67
4,150.6	13.43	257.83	4,145.2	-49.6	-51.5	26.7	3.91

JUN 01 2015



WV GEOLOGICAL SURVEY
MORGANTOWN, WV

EOW Completion Report



Company: Antero Resources
Project: Doddridge County WV
Site: Costlow/Duff/Mishka
Well: Costlow Unit 2H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Costlow Unit 2H
TVD Reference: Costlow Unit 2H GL' 996+19' RKB @ 1015.0usft
MD Reference: Costlow Unit 2H GL' 996+19' RKB @ 1015.0usft
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)
4,175.5	13.67	257.67	4,169.4	-50.9	-57.2	25.7	0.98
4,200.6	13.80	257.51	4,193.7	-52.1	-63.0	24.8	0.54
4,225.8	13.77	257.18	4,218.2	-53.5	-68.8	23.8	0.33
4,251.2	13.77	256.99	4,242.9	-54.8	-74.7	22.8	0.18
4,275.0	14.21	257.04	4,266.0	-56.1	-80.3	21.9	1.85
4,300.1	14.55	257.33	4,290.3	-57.5	-86.4	20.9	1.38
4,325.4	15.38	257.66	4,314.7	-58.9	-92.8	19.8	3.30
4,350.2	16.07	258.15	4,338.6	-60.3	-99.4	18.7	2.84
4,375.8	17.22	258.58	4,363.2	-61.8	-106.6	17.4	4.51
4,400.1	18.46	258.35	4,386.3	-63.3	-113.9	16.0	5.12
4,425.4	19.30	257.76	4,410.2	-65.0	-121.8	14.6	3.41
4,450.3	20.92	256.60	4,433.6	-66.9	-130.2	13.2	6.68
4,475.9	22.29	254.84	4,457.4	-69.2	-139.3	12.0	5.92
4,500.2	23.26	253.61	4,479.8	-71.8	-148.4	10.9	4.44
4,525.3	24.24	252.22	4,502.8	-74.7	-158.1	10.1	4.50
4,550.5	25.12	249.51	4,525.6	-78.2	-168.0	9.6	5.70
4,575.9	25.96	245.63	4,548.6	-82.4	-178.1	9.6	7.35
4,600.2	26.28	245.22	4,570.4	-86.8	-187.8	10.1	1.51
4,625.4	26.54	245.02	4,593.0	-91.5	-198.0	10.7	1.09
4,650.5	27.02	244.79	4,615.3	-96.3	-208.2	11.3	1.96
4,676.0	27.11	244.68	4,638.1	-101.3	-218.7	12.0	0.40
4,700.3	27.09	244.91	4,659.7	-106.0	-228.8	12.6	0.44
4,725.4	27.41	245.35	4,682.0	-110.8	-239.2	13.2	1.51
4,750.2	27.22	246.78	4,704.1	-115.4	-249.6	13.5	2.75
4,775.0	27.31	246.80	4,726.1	-119.9	-260.0	13.8	0.36
4,800.5	26.12	246.88	4,748.9	-124.4	-270.6	14.0	4.67
4,825.6	25.91	246.66	4,771.5	-128.8	-280.7	14.3	0.92
4,850.8	25.01	246.63	4,794.2	-133.1	-290.6	14.5	3.58
4,875.2	24.92	246.03	4,816.3	-137.2	-300.0	14.8	1.10
4,900.8	24.68	245.72	4,839.5	-141.6	-309.8	15.2	1.07
4,925.9	24.26	245.45	4,862.4	-145.9	-319.3	15.6	1.73
4,950.5	24.27	244.98	4,884.9	-150.1	-328.5	16.1	0.78
4,975.6	23.70	243.18	4,907.8	-154.6	-337.7	16.8	3.70
5,000.8	24.44	241.98	4,930.8	-159.3	-346.8	17.8	3.52
5,025.8	25.33	240.07	4,953.5	-164.4	-356.0	19.1	4.80
5,050.4	26.11	239.64	4,975.7	-169.8	-365.2	20.6	3.25
5,075.2	26.43	240.03	4,997.9	-175.3	-374.7	22.2	1.47
5,100.4	26.79	242.10	5,020.4	-180.7	-384.6	23.5	3.95
5,125.6	27.13	243.12	5,042.8	-186.0	-394.7	24.6	2.28
5,150.6	26.66	242.79	5,065.2	-191.2	-404.8	25.6	1.97
5,175.4	26.89	242.97	5,087.2	-196.2	-414.7	26.6	0.99
5,200.0	26.47	242.63	5,109.3	-201.3	-424.6	27.6	1.81
5,225.1	26.45	242.81	5,131.8	-206.4	-434.5	28.6	0.33
5,250.3	26.07	243.88	5,154.3	-211.4	-444.5	29.5	2.41
5,275.4	25.97	246.12	5,176.9	-216.1	-454.5	30.1	3.93



Company: Antero Resources
 Project: Doddridge County WV
 Site: Costlow/Duff/Mishka
 Well: Costlow Unit 2H
 Wellbore: Original Wellpath
 Design: As Drilled

Local Co-ordinate Reference: Well Costlow Unit 2H
 TVD Reference: Costlow Unit 2H GL' 996+19' RKB @ 1015.0usft
 MD Reference: Costlow Unit 2H GL' 996+19' RKB @ 1015.0usft
 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)
5,300.3	25.69	248.11	5,199.3	-220.3	-464.4	30.3	3.66
5,325.2	25.45	247.24	5,221.7	-224.4	-474.4	30.3	1.79
5,350.1	25.43	246.61	5,244.2	-228.6	-484.2	30.5	1.09
5,375.2	25.50	244.69	5,267.0	-233.0	-494.1	31.0	3.29
5,400.4	25.36	243.38	5,289.7	-237.8	-503.8	31.7	2.30
5,425.1	25.47	243.30	5,312.0	-242.5	-513.3	32.6	0.47
5,451.5	26.15	243.48	5,335.8	-247.7	-523.5	33.5	2.60
5,475.1	26.58	243.81	5,356.9	-252.3	-532.9	34.3	1.92
5,500.4	27.21	244.67	5,379.5	-257.3	-543.2	35.0	2.93
5,525.6	27.82	245.22	5,401.8	-262.2	-553.8	35.7	2.63
5,550.5	28.52	245.39	5,423.7	-267.1	-564.5	36.2	2.83
5,575.1	28.32	245.06	5,445.4	-272.0	-575.1	36.8	1.03
5,600.4	28.18	245.12	5,467.7	-277.1	-585.9	37.4	0.57
5,625.6	28.26	246.60	5,489.9	-281.9	-596.9	37.8	2.79
5,650.0	28.38	247.40	5,511.4	-286.5	-607.5	38.0	1.63
5,675.5	28.29	247.18	5,533.8	-291.1	-618.6	38.2	0.54
5,701.1	28.18	246.61	5,556.3	-295.9	-629.8	38.4	1.14
5,725.4	28.41	245.93	5,577.7	-300.5	-640.3	38.8	1.63
5,750.6	28.26	245.59	5,600.0	-305.4	-651.3	39.2	0.87
5,775.5	28.08	245.21	5,621.9	-310.3	-661.9	39.8	1.02
5,801.2	28.01	244.80	5,644.6	-315.4	-672.9	40.4	0.80
5,825.7	27.85	244.12	5,666.2	-320.4	-683.2	41.1	1.46
5,850.7	27.85	243.26	5,688.3	-325.6	-693.7	42.0	1.61
5,875.5	27.95	243.18	5,710.3	-330.8	-704.1	43.0	0.43
5,900.8	27.67	244.69	5,732.6	-336.0	-714.7	43.8	3.00
5,925.7	27.13	246.77	5,754.8	-340.7	-725.1	44.2	4.41
5,951.5	26.47	248.90	5,777.7	-345.1	-735.9	44.3	4.53
5,976.0	25.98	249.00	5,799.8	-349.0	-746.0	44.1	2.00
6,001.0	26.19	248.83	5,822.2	-352.9	-756.2	43.9	0.89
6,025.1	26.06	247.81	5,843.8	-356.8	-766.1	43.9	1.94
6,050.0	26.14	247.00	5,866.2	-361.0	-776.2	44.0	1.46
6,076.2	26.73	246.91	5,889.7	-365.6	-786.9	44.2	2.26
6,100.3	26.81	246.72	5,911.1	-369.9	-796.9	44.4	0.49
6,125.3	26.89	246.80	5,933.5	-374.3	-807.3	44.7	0.35
6,151.4	26.76	247.01	5,956.8	-379.0	-818.1	44.9	0.62
6,175.5	26.79	246.73	5,978.3	-383.2	-828.1	45.1	0.54
6,200.5	26.78	246.74	6,000.6	-387.7	-838.5	45.4	0.04
6,226.6	26.52	246.74	6,024.0	-392.3	-849.2	45.6	1.00
6,250.9	26.47	246.62	6,045.7	-396.6	-859.2	45.9	0.30
6,275.8	26.30	246.25	6,067.9	-401.0	-869.3	46.2	0.95
6,300.4	26.60	246.26	6,090.0	-405.4	-879.3	46.5	1.22
6,326.0	26.28	246.09	6,113.0	-410.0	-889.8	46.9	1.28
6,351.1	26.34	246.57	6,135.4	-414.5	-900.0	47.2	0.88
6,376.0	26.10	246.84	6,157.7	-418.8	-910.1	47.4	1.08

JUN 01 2015



GEOLOGICAL SURVEY EOW Completion Report MORGANTOWN, WV



Company: Antero Resources
Project: Doddridge County WV
Site: Costlow/Duff/Mishka
Well: Costlow Unit 2H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Costlow Unit 2H
TVD Reference: Costlow Unit 2H GL' 996+19' RKB @ 1015.0usft
MD Reference: Costlow Unit 2H GL' 996+19' RKB @ 1015.0usft
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)
6,400.3	25.82	246.80	6,179.6	-423.0	-919.9	47.6	1.15
6,425.3	25.78	246.75	6,202.1	-427.3	-929.8	47.9	0.18
6,451.1	25.75	246.65	6,225.3	-431.8	-940.1	48.1	0.20
6,475.6	25.63	246.76	6,247.5	-436.0	-949.9	48.4	0.53
6,501.0	25.60	247.31	6,270.3	-440.2	-960.0	48.6	0.95
6,525.2	25.66	247.06	6,292.2	-444.3	-969.7	48.7	0.51
6,550.7	25.38	247.32	6,315.2	-448.6	-979.8	48.9	1.18
6,575.2	25.34	247.33	6,337.3	-452.6	-989.5	49.0	0.16
6,614.0	24.97	247.18	6,372.4	-459.0	-1,004.7	49.2	0.97
6,658.0	25.43	243.43	6,412.2	-466.8	-1,021.7	50.1	3.78
6,704.0	27.70	231.45	6,453.4	-477.9	-1,038.9	53.9	12.62
6,748.0	30.40	221.07	6,491.9	-492.7	-1,054.2	61.9	12.97
6,793.0	33.41	211.23	6,530.1	-511.9	-1,068.1	74.5	13.33
6,837.0	35.32	202.83	6,566.5	-534.0	-1,079.4	90.8	11.61
6,883.0	38.25	194.79	6,603.3	-560.0	-1,088.2	111.6	12.24
6,927.0	40.89	188.44	6,637.2	-587.4	-1,093.8	134.9	10.97
6,973.0	45.67	183.97	6,670.7	-618.8	-1,097.1	162.7	12.34
7,017.0	50.19	181.32	6,700.2	-651.4	-1,098.6	192.4	11.20
7,062.0	50.61	180.78	6,728.9	-686.1	-1,099.2	224.3	1.31
7,070.0	51.43	179.99	6,733.9	-692.3	-1,099.3	230.1	12.80
Burkett							
7,106.0	55.19	176.67	6,755.4	-721.1	-1,098.4	257.1	12.80
7,119.0	56.54	175.17	6,762.7	-731.9	-1,097.6	267.4	14.14
Tully							
7,152.0	60.06	171.56	6,780.1	-759.7	-1,094.4	294.4	14.14
7,196.0	63.51	169.64	6,800.9	-798.0	-1,088.0	332.3	8.73
7,241.0	67.57	168.17	6,819.5	-838.2	-1,080.2	372.5	9.50
7,245.0	68.01	168.08	6,821.0	-841.8	-1,079.4	376.1	11.15
Marcellus							
7,285.0	72.40	167.25	6,834.6	-878.5	-1,071.4	413.2	11.15
7,331.0	77.21	165.18	6,846.6	-921.6	-1,060.8	457.2	11.32
7,374.0	82.42	161.95	6,854.2	-962.2	-1,048.8	499.3	14.19
7,429.0	89.83	159.76	6,857.9	-1,014.0	-1,030.8	554.0	14.05
7,445.0	90.47	158.22	6,857.9	-1,028.9	-1,025.1	570.0	10.42
7,519.0	90.34	156.81	6,857.4	-1,097.3	-996.8	644.0	1.91
7,609.0	91.44	157.75	6,856.0	-1,180.3	-962.0	734.0	1.61
7,698.0	89.90	157.99	6,854.9	-1,262.7	-928.5	823.0	1.75
7,788.0	90.17	158.22	6,854.9	-1,346.3	-894.9	913.0	0.39
7,878.0	89.43	156.25	6,855.2	-1,429.2	-860.1	1,003.0	2.34
7,967.0	89.43	155.47	6,856.1	-1,510.5	-823.7	1,091.9	0.88
8,057.0	89.03	157.40	6,857.3	-1,592.9	-787.7	1,181.9	2.19
8,147.0	89.83	159.83	6,858.2	-1,676.7	-754.9	1,271.8	2.84
8,237.0	89.76	161.38	6,858.5	-1,761.6	-725.0	1,361.7	1.72
8,326.0	88.90	158.85	6,859.5	-1,845.3	-694.8	1,450.7	3.00

RECEIVED

JUN 01 2015



EOW Completion Report



WV GEOLOGICAL SURVEY MORGANTOWN, WV

Company: Antero Resources
Project: Doddridge County WV
Site: Costlow/Duff/Mishka
Well: Costlow Unit 2H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Costlow Unit 2H
TVD Reference: Costlow Unit 2H GL' 996+19' RKB @ 1015.0usft
MD Reference: Costlow Unit 2H GL' 996+19' RKB @ 1015.0usft
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)
8,416.0	90.31	157.88	6,860.2	-1,929.0	-661.6	1,540.7	1.90
8,506.0	89.97	158.03	6,859.9	-2,012.4	-627.8	1,630.7	0.41
8,596.0	88.59	157.57	6,861.1	-2,095.7	-593.8	1,720.6	1.62
8,686.0	90.57	158.36	6,861.7	-2,179.1	-560.0	1,810.6	2.37
8,775.0	90.34	157.31	6,861.0	-2,261.5	-526.5	1,899.6	1.21
8,865.0	89.23	155.00	6,861.4	-2,343.8	-490.1	1,989.6	2.85
8,954.0	88.96	154.12	6,862.8	-2,424.2	-451.9	2,078.4	1.03
9,044.0	89.60	158.31	6,863.9	-2,506.5	-415.6	2,168.3	4.71
9,134.0	90.17	160.10	6,864.1	-2,590.7	-383.6	2,258.3	2.09
9,223.0	90.13	160.52	6,863.8	-2,674.5	-353.6	2,347.2	0.47
9,313.0	89.53	160.61	6,864.1	-2,759.3	-323.7	2,437.2	0.67
9,403.0	89.23	159.01	6,865.1	-2,843.8	-292.6	2,527.1	1.81
9,492.0	89.83	158.00	6,865.8	-2,926.6	-260.0	2,616.1	1.32
9,582.0	87.95	157.22	6,867.6	-3,009.8	-225.7	2,706.1	2.26
9,672.0	87.31	156.49	6,871.3	-3,092.5	-190.4	2,796.0	1.08
9,761.0	86.94	155.58	6,875.7	-3,173.7	-154.3	2,884.8	1.10
9,851.0	87.61	156.87	6,880.0	-3,256.0	-118.1	2,974.7	1.61
9,940.0	88.69	158.18	6,882.9	-3,338.2	-84.1	3,063.6	1.91
10,030.0	92.55	159.68	6,881.9	-3,422.1	-51.7	3,153.6	4.60
10,119.0	90.27	156.01	6,879.7	-3,504.5	-18.2	3,242.5	4.85
10,209.0	90.57	153.76	6,879.1	-3,586.0	20.0	3,332.4	2.52
10,304.0	92.08	156.81	6,876.9	-3,672.3	59.7	3,427.2	3.58
10,399.0	92.55	157.22	6,873.0	-3,759.6	96.8	3,522.1	0.66
10,494.0	91.61	157.49	6,869.6	-3,847.3	133.4	3,617.1	1.03
10,588.0	91.98	157.30	6,866.6	-3,934.0	169.5	3,711.0	0.44
10,683.0	92.51	158.76	6,862.9	-4,022.0	205.0	3,805.9	1.63
10,778.0	92.59	161.68	6,858.7	-4,111.3	237.1	3,900.8	3.07
10,873.0	91.91	159.06	6,855.0	-4,200.7	269.0	3,995.6	2.85
10,967.0	92.42	160.26	6,851.4	-4,288.8	301.6	4,089.5	1.39
11,062.0	92.55	161.02	6,847.3	-4,378.3	333.1	4,184.3	0.81
11,157.0	92.38	161.21	6,843.2	-4,468.1	363.8	4,279.1	0.27
11,252.0	91.54	158.67	6,840.0	-4,557.3	396.4	4,374.0	2.81
11,346.0	89.87	157.09	6,838.8	-4,644.4	431.8	4,467.9	2.45
11,436.0	88.42	156.54	6,840.1	-4,727.1	467.2	4,557.9	1.72
11,525.0	90.17	156.79	6,841.2	-4,808.8	502.5	4,646.9	1.99
11,615.0	90.27	156.52	6,840.9	-4,891.4	538.1	4,736.9	0.32
11,704.0	90.20	156.07	6,840.5	-4,972.9	573.9	4,825.8	0.51
11,794.0	91.07	159.81	6,839.5	-5,056.3	607.7	4,915.8	4.27
11,884.0	90.87	158.90	6,838.0	-5,140.5	639.4	5,005.8	1.04
11,973.0	91.14	158.15	6,836.4	-5,223.3	672.0	5,094.7	0.90
12,063.0	88.69	158.20	6,836.6	-5,306.9	705.5	5,184.7	2.72
12,152.0	88.12	157.12	6,839.1	-5,389.2	739.3	5,273.7	1.37
12,242.0	87.62	155.85	6,842.4	-5,471.6	775.1	5,363.6	1.52
12,332.0	88.49	158.11	6,845.5	-5,554.4	810.3	5,453.5	2.69
12,421.0	88.42	157.69	6,847.9	-5,636.8	843.8	5,542.5	0.48

JUN 01 2015



WV GEOLOGICAL SURVEY FLOW Completion Report
MORGANTOWN, WV



Company: Antero Resources
Project: Doddridge County WV
Site: Costlow/Duff/Mishka
Well: Costlow Unit 2H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Costlow Unit 2H
TVD Reference: Costlow Unit 2H GL' 996+19' RKB @ 1015.0usft
MD Reference: Costlow Unit 2H GL' 996+19' RKB @ 1015.0usft
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)
12,511.0	88.76	158.27	6,850.1	-5,720.3	877.5	5,632.5	0.75
12,601.0	88.66	158.67	6,852.1	-5,804.0	910.5	5,722.4	0.46
12,690.0	90.24	159.83	6,853.0	-5,887.2	942.1	5,811.4	2.20
12,780.0	90.84	160.26	6,852.1	-5,971.8	972.8	5,901.3	0.82
12,869.0	91.68	157.52	6,850.1	-6,054.8	1,004.8	5,990.3	3.22
12,959.0	92.01	157.79	6,847.2	-6,138.0	1,039.0	6,080.3	0.47
13,049.0	90.54	154.09	6,845.2	-6,220.1	1,075.7	6,170.2	4.42
13,138.0	90.77	154.96	6,844.2	-6,300.5	1,114.0	6,259.0	1.01
13,228.0	91.11	157.65	6,842.7	-6,382.8	1,150.1	6,348.9	3.01
13,317.0	91.31	159.33	6,840.9	-6,465.6	1,182.8	6,437.9	1.90
13,407.0	91.28	159.56	6,838.8	-6,549.9	1,214.4	6,527.8	0.26
13,497.0	91.44	159.33	6,836.7	-6,634.1	1,246.0	6,617.8	0.31
13,586.0	91.24	156.88	6,834.6	-6,716.7	1,279.1	6,706.8	2.76
13,676.0	90.47	157.69	6,833.3	-6,799.7	1,313.9	6,796.7	1.24
13,766.0	91.31	157.92	6,831.9	-6,883.0	1,347.9	6,886.7	0.97
13,855.0	91.24	157.51	6,829.9	-6,965.3	1,381.6	6,975.7	0.47
13,945.0	91.91	157.82	6,827.4	-7,048.5	1,415.8	7,065.7	0.82
14,035.0	90.34	154.23	6,825.7	-7,130.8	1,452.4	7,155.6	4.35
14,124.0	91.68	156.69	6,824.1	-7,211.7	1,489.3	7,244.5	3.15
14,214.0	92.92	159.13	6,820.5	-7,295.0	1,523.1	7,334.4	3.04
14,304.0	92.28	158.17	6,816.4	-7,378.7	1,555.9	7,424.3	1.28
14,393.0	91.78	160.08	6,813.2	-7,461.8	1,587.6	7,513.2	2.22
14,483.0	91.48	160.41	6,810.7	-7,546.5	1,618.0	7,603.1	0.50
14,573.0	89.77	159.60	6,809.7	-7,631.1	1,648.7	7,693.0	2.10
14,662.0	91.78	161.22	6,808.5	-7,714.9	1,678.6	7,781.9	2.90
14,752.0	92.05	160.98	6,805.5	-7,800.0	1,707.7	7,871.8	0.40
14,842.0	89.19	157.11	6,804.5	-7,884.0	1,739.9	7,961.7	5.35
14,931.0	90.03	156.86	6,805.1	-7,965.9	1,774.7	8,050.7	0.98
15,021.0	89.53	155.68	6,805.5	-8,048.3	1,810.9	8,140.7	1.42
15,111.0	89.90	156.86	6,805.9	-8,130.7	1,847.1	8,230.6	1.37
15,200.0	89.73	156.69	6,806.2	-8,212.5	1,882.2	8,319.6	0.27
15,290.0	91.14	159.18	6,805.5	-8,295.9	1,916.0	8,409.6	3.18
15,380.0	91.54	158.93	6,803.4	-8,379.9	1,948.2	8,499.5	0.52
15,469.0	90.70	159.46	6,801.7	-8,463.1	1,979.8	8,588.5	1.12
15,559.0	89.53	159.36	6,801.5	-8,547.4	2,011.4	8,678.5	1.30
15,649.0	90.00	160.50	6,801.9	-8,631.9	2,042.3	8,768.4	1.37
15,739.0	87.65	156.60	6,803.7	-8,715.6	2,075.2	8,858.4	5.06
15,828.0	87.68	155.36	6,807.3	-8,796.8	2,111.4	8,947.2	1.39
15,918.0	87.95	156.48	6,810.8	-8,879.0	2,148.1	9,037.1	1.28
16,008.0	88.76	157.02	6,813.3	-8,961.6	2,183.6	9,127.1	1.08
16,097.0	89.46	156.83	6,814.7	-9,043.5	2,218.5	9,216.0	0.81
16,187.0	90.60	157.68	6,814.7	-9,126.5	2,253.3	9,306.0	1.58
16,277.0	88.45	156.28	6,815.4	-9,209.3	2,288.5	9,396.0	2.85
16,367.0	90.47	159.75	6,816.3	-9,292.7	2,322.2	9,486.0	4.46



EOW Completion Report



Company: Antero Resources
Project: Doddridge County WV
Site: Costlow/Duff/Mishka
Well: Costlow Unit 2H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Costlow Unit 2H
TVD Reference: Costlow Unit 2H GL' 996+19' RKB @ 1015.0usft
MD Reference: Costlow Unit 2H GL' 996+19' RKB @ 1015.0usft
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)
16,456.0	90.84	159.83	6,815.3	-9,376.3	2,352.9	9,574.9	0.43
16,546.0	89.73	159.58	6,814.8	-9,460.7	2,384.1	9,664.9	1.26
16,636.0	89.78	158.94	6,815.2	-9,544.8	2,416.0	9,754.9	0.71
16,725.0	90.31	158.50	6,815.1	-9,627.8	2,448.3	9,843.9	0.77
16,807.0	90.23	156.75	6,814.7	-9,703.6	2,479.5	9,925.8	2.14
16,860.0	90.23	156.75	6,814.5	-9,752.3	2,500.4	9,978.8	0.00

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,070.0	6,733.9	-692.3	-1,099.3	Burkett
7,119.0	6,762.7	-731.9	-1,097.6	Tully
7,245.0	6,821.0	-841.8	-1,079.4	Marcellus

Checked By: _____ Approved By: _____ Date: _____

RECEIVED
 JUN 01 2015
 WV GEOLOGICAL SURVEY
 MORGANTOWN, WV