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AUG 10 2015

WV GEOLOGICAL SURVEY
MORGANTOWN, WV



Callie Unit 1H
Doddridge County WV
Northing: 14249854.87
Easting: 1682098.31
As Drilled



WELL DETAILS: Callie Unit 1H
Ground Level: 1005.0
Northing: 14249854.87
Easting: 1682098.31
Longitude: 51° 10.023' W
Latitude: 28.944° N

Genie Lightfoot
15:38, May 29 2014
Scientific Drilling
421 South Eagle Lane
Oklahoma City, OK 73128

PROJECT DETAILS: Doddridge County WV

Geodetic System: Universal Transverse Mercator (US Survey Feet)
Datum: NAD 1983 (NAD83 CONUS)
Ellipsoid: Clarke 1866
Zone: Zone 17N (84 W to 78 W)
System Datum: Mean Sea Level

Pro 522 Callie 1H 1005 GL + 18 KB @ 1023.0usft
Gr: 1005.0

LEGEND

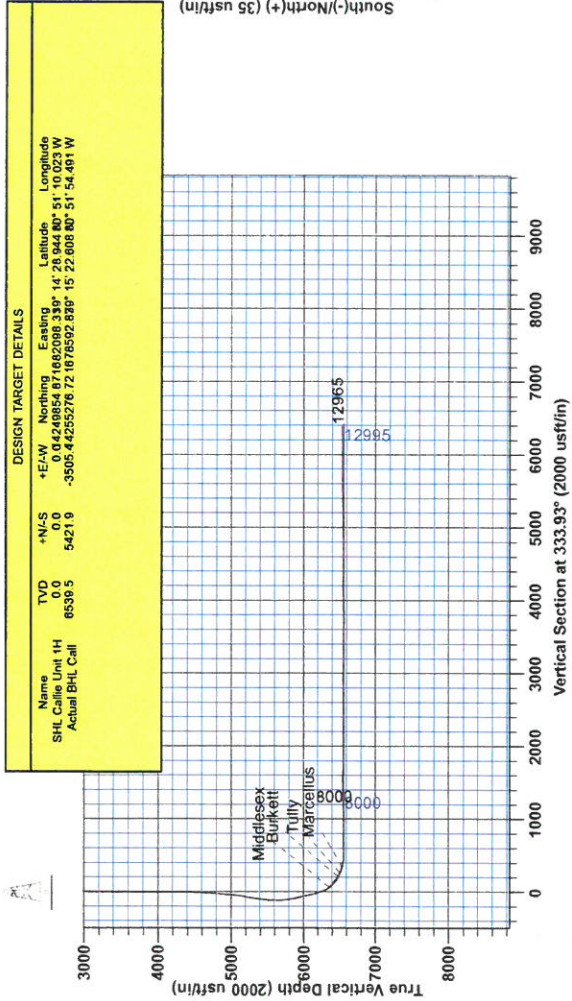
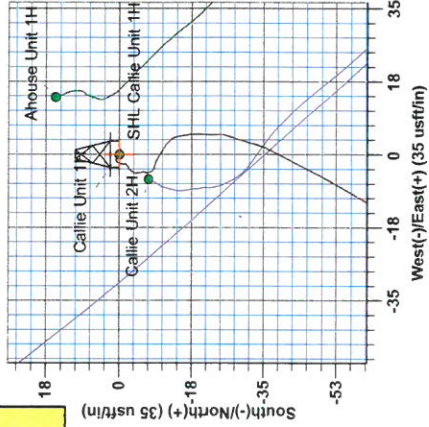
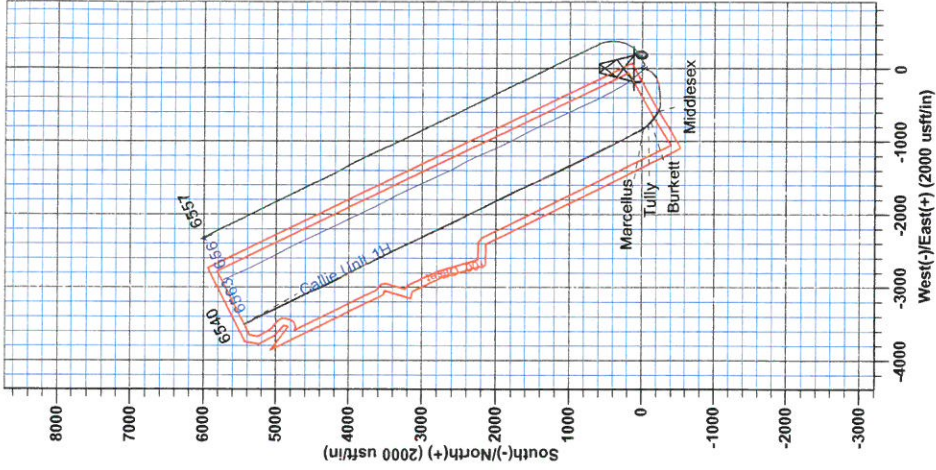
- Callie Unit 2H, Original Wellpath, As Drilled V0
- Callie Unit 1H, Original Wellpath, Plan 6 V0
- Ahouse Unit 1H, Original Wellpath, As Drilled V0
- As Drilled

SITE DETAILS: Ahouse / Callie Pad

Site Center: Ahouse Unit 1H
Site Centre Northing: 14249870.09
Easting: 1682112.06
Positional Uncertainty: 2.8
Convergence: 0.09
Local North: Grd

Azimuths to Grid North
True North: -0.09°
Magnetic North: -8.50°
Magnetic Field
Strength: 52348.80nT
Dip Angle: 66.92°
Date: 8/21/2013
Model: BGGM2014

To convert Magnetic North to Grid, Subtract 8.50°
To convert True North to Grid, Subtract 0.09°



DESIGN TARGET DETAILS

Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
SHL Callie Unit 1H	0.0	0.0	0	14249854.87	1682098.31	28.944° N	51° 10.023' W
Actual BHL Call	6539.5	542.19	-3505.44	14255276.12	1676592.68	28.944° N	51° 54.491' W



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MORGANTOWN, WV

Antero Resources

Doddridge County WV
Ahouse / Callie Pad
Callie Unit 1H
Original Wellpath

Design: As Drilled

EOW Completion Report

29 May, 2014



AUG 10 2015



EOW Completion Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Callie Unit 1H
Project:	Doddridge County WV	TVD Reference:	Pre 522 Callie 1H 1005 GL + 18 KB @ 1023.0usft
Site:	Ahouse / Callie Pad	MD Reference:	Pre 522 Callie 1H 1005 GL + 18 KB @ 1023.0usft
Well:	Callie 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	Ahouse / Callie Pad				
Site Position:		Northing:	14,249,870.09usft	Latitude:	39° 14' 29.095 N
From:	Map	Easting:	1,682,112.06usft	Longitude:	80° 51' 9.848 W
Position Uncertainty:	2.8 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.09 °

Well	Callie Unit 1H, Marcellus					
Well Position	+N/-S	0.0 usft	Northing:	14,249,854.87 usft	Latitude:	39° 14' 28.944 N
	+E/-W	0.0 usft	Easting:	1,682,098.31 usft	Longitude:	80° 51' 10.023 W
Position Uncertainty	2.8 usft		Wellhead Elevation:	1,023.0 usft	Ground Level:	1,005.0 usft

Wellbore	Original Wellpath				
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	8/21/2013	-8.41	66.92	52,349

Design	As Drilled				
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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	97.60	

Survey Program	From (usft)	To (usft)	Date	Survey (Wellbore)	Tool Name	Description
	105.0	6,217.0	5/29/2014	Survey #4 Def to KOP (Original Wellpath)	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
	6,271.0	12,965.0		Survey #5 SDI MWD (Original Wellpath)	MWD SDI	MWD - Standard ver 1.0.1

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
105.0	0.09	247.80	105.0	0.0	-0.1	-0.1	0.09
205.0	0.03	287.11	205.0	-0.1	-0.2	-0.2	0.07
305.0	0.10	338.57	305.0	0.0	-0.2	-0.2	0.08
405.0	0.22	273.92	405.0	0.1	-0.5	-0.5	0.20
505.0	0.07	259.06	505.0	0.1	-0.7	-0.7	0.15
605.0	0.12	15.83	605.0	0.2	-0.7	-0.8	0.16
705.0	0.16	268.47	705.0	0.3	-0.8	-0.9	0.23
805.0	0.10	30.35	805.0	0.4	-0.9	-1.0	0.23
905.0	0.10	327.37	905.0	0.5	-0.9	-1.0	0.10
1,005.0	0.19	285.77	1,005.0	0.7	-1.2	-1.2	0.13

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EOW Completion Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Callie Unit 1H
Project:	Doddridge County WV	TVD Reference:	Pre 522 Callie 1H 1005 GL + 18 KB @ 1023.0usft
Site:	Ahouse / Callie Pad	MD Reference:	Pre 522 Callie 1H 1005 GL + 18 KB @ 1023.0usft
Well:	Callie 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)
1,105.0	0.08	136.86	1,105.0	0.7	-1.3	-1.3	0.26
1,205.0	0.13	26.47	1,205.0	0.7	-1.2	-1.2	0.17
1,305.0	0.15	291.23	1,305.0	0.9	-1.2	-1.3	0.21
1,405.0	0.19	222.33	1,405.0	0.8	-1.5	-1.6	0.20
1,505.0	0.01	290.06	1,505.0	0.7	-1.6	-1.7	0.19
1,605.0	0.18	234.93	1,605.0	0.6	-1.7	-1.8	0.17
1,705.0	0.16	216.82	1,705.0	0.4	-1.9	-2.0	0.06
1,805.0	0.19	190.87	1,805.0	0.1	-2.1	-2.0	0.08
1,905.0	0.33	200.19	1,905.0	-0.3	-2.2	-2.1	0.15
2,005.0	0.11	141.90	2,005.0	-0.7	-2.2	-2.1	0.29
2,105.0	0.16	252.65	2,105.0	-0.8	-2.3	-2.2	0.22
2,205.0	0.22	160.18	2,205.0	-1.0	-2.4	-2.2	0.28
2,305.0	0.16	158.86	2,305.0	-1.3	-2.3	-2.1	0.06
2,405.0	0.32	218.68	2,405.0	-1.7	-2.4	-2.1	0.28
2,505.0	0.53	241.82	2,505.0	-2.1	-3.0	-2.7	0.27
2,605.0	0.31	243.80	2,605.0	-2.5	-3.6	-3.3	0.22
2,705.0	0.41	194.79	2,705.0	-2.9	-3.9	-3.5	0.31
2,805.0	0.22	237.04	2,805.0	-3.4	-4.2	-3.7	0.29
2,905.0	0.26	196.90	2,905.0	-3.7	-4.4	-3.9	0.17
3,005.0	0.21	185.90	3,005.0	-4.1	-4.5	-3.9	0.07
3,105.0	0.33	170.05	3,105.0	-4.6	-4.5	-3.8	0.14
3,205.0	0.34	172.64	3,205.0	-5.1	-4.4	-3.7	0.02
3,305.0	0.15	152.29	3,305.0	-5.6	-4.3	-3.5	0.21
3,405.0	0.33	183.74	3,405.0	-6.0	-4.2	-3.4	0.22
3,505.0	0.31	194.15	3,505.0	-6.5	-4.3	-3.4	0.06
3,605.0	0.21	155.89	3,605.0	-6.9	-4.3	-3.4	0.19
3,705.0	0.24	190.94	3,705.0	-7.3	-4.3	-3.3	0.14
3,805.0	0.37	145.28	3,805.0	-7.8	-4.1	-3.1	0.27
3,905.0	0.34	133.65	3,905.0	-8.2	-3.7	-2.6	0.08
4,005.0	0.37	103.81	4,005.0	-8.5	-3.2	-2.1	0.19
4,105.0	0.55	104.36	4,105.0	-8.7	-2.4	-1.3	0.18
4,205.0	0.57	112.24	4,205.0	-9.0	-1.5	-0.3	0.08
4,305.0	0.85	125.82	4,305.0	-9.7	-0.5	0.8	0.32
4,405.0	0.91	119.76	4,404.9	-10.5	0.8	2.2	0.11
4,505.0	1.05	119.17	4,504.9	-11.3	2.3	3.8	0.14
4,605.0	1.50	149.09	4,604.9	-12.9	3.8	5.5	0.79
4,705.0	3.86	173.78	4,704.8	-17.4	4.8	7.1	2.57
4,805.0	5.20	185.64	4,804.5	-25.2	4.8	8.0	1.63
4,905.0	6.95	205.28	4,903.9	-35.2	1.7	6.4	2.69
5,005.0	10.05	208.51	5,002.8	-48.3	-5.0	1.4	3.14
5,105.0	11.40	210.75	5,101.1	-64.5	-14.2	-5.6	1.41
5,205.0	16.61	201.38	5,198.1	-86.3	-24.5	-12.9	5.67
5,305.0	16.49	209.95	5,293.9	-111.9	-36.8	-21.7	2.44
5,405.0	19.10	224.04	5,389.2	-136.0	-55.3	-36.8	5.02

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MORGANTOWN, WV

EOW Completion Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Callie Unit 1H
Project:	Doddridge County WV	TVD Reference:	Pre 522 Callie 1H 1005 GL + 18 KB @ 1023.0usft
Site:	Ahouse / Callie Pad	MD Reference:	Pre 522 Callie 1H 1005 GL + 18 KB @ 1023.0usft
Well:	Callie 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)
5,505.0	23.91	228.19	5,482.2	-161.3	-81.8	-59.7	5.04
5,605.0	24.26	237.92	5,573.5	-185.7	-114.3	-88.7	3.98
5,705.0	28.54	244.23	5,663.1	-207.0	-153.2	-124.5	5.11
5,805.0	25.93	255.93	5,752.1	-222.8	-196.0	-164.8	5.94
5,905.0	27.76	266.95	5,841.4	-229.3	-240.5	-208.1	5.29
6,005.0	33.39	266.06	5,927.4	-232.4	-291.3	-257.9	5.65
6,105.0	33.55	264.25	6,010.8	-237.1	-346.2	-311.8	1.01
6,205.0	33.44	263.60	6,094.2	-242.9	-401.1	-365.4	0.38
6,217.0	32.85	263.42	6,104.3	-243.7	-407.6	-371.8	4.98
6,271.0	32.07	263.37	6,149.8	-247.0	-436.4	-399.9	1.45
6,302.0	32.40	265.44	6,176.1	-248.6	-452.8	-416.0	3.72
6,333.0	32.80	270.44	6,202.2	-249.2	-469.5	-432.4	8.78
6,364.0	32.79	274.21	6,228.2	-248.5	-486.3	-449.1	6.59
6,394.0	33.33	277.76	6,253.4	-246.8	-502.6	-465.5	6.70
6,425.0	36.05	282.33	6,278.9	-243.7	-519.9	-483.1	12.14
6,456.0	38.78	287.28	6,303.5	-238.9	-538.1	-501.8	13.10
6,487.0	42.21	292.17	6,327.1	-232.1	-557.0	-521.4	15.07
6,518.0	45.64	296.22	6,349.4	-223.3	-576.6	-542.0	14.30
6,535.0	47.04	297.76	6,361.1	-217.7	-587.6	-553.6	10.52
Middlesex							
6,549.0	48.21	298.97	6,370.6	-212.8	-596.7	-563.3	10.52
6,580.0	50.91	301.40	6,390.7	-200.9	-617.1	-585.1	10.56
6,611.0	53.55	303.60	6,409.7	-187.7	-637.7	-607.3	10.20
6,641.0	55.77	305.23	6,427.0	-173.9	-657.9	-629.1	8.63
6,672.0	57.68	306.76	6,444.0	-158.7	-678.9	-651.9	7.42
6,703.0	59.79	308.87	6,460.1	-142.4	-699.8	-674.8	8.95
6,734.0	61.42	311.10	6,475.3	-125.0	-720.5	-697.6	8.18
6,745.0	61.86	311.93	6,480.6	-118.6	-727.7	-705.6	7.70
Burkett							
6,765.0	62.66	313.41	6,489.9	-106.6	-740.7	-720.1	7.70
6,796.0	64.87	315.61	6,503.6	-87.1	-760.6	-742.4	9.56
6,804.0	65.75	316.26	6,506.9	-81.9	-765.6	-748.1	13.24
Tully							
6,827.0	68.30	318.07	6,515.9	-66.4	-780.0	-764.4	13.24
6,857.0	71.49	321.78	6,526.2	-44.8	-798.1	-785.2	15.74
6,888.0	73.85	324.94	6,535.5	-21.1	-815.8	-805.8	12.35
6,891.0	73.98	325.17	6,536.3	-18.7	-817.4	-807.8	8.54
Marcellus							
6,919.0	75.19	327.31	6,543.7	3.7	-832.4	-825.6	8.54
6,950.0	76.67	329.95	6,551.3	29.4	-848.1	-844.5	9.54
6,981.0	80.54	332.24	6,557.4	56.0	-862.8	-862.6	14.43
7,012.0	85.10	333.14	6,561.3	83.3	-876.9	-880.2	14.99
7,105.0	92.86	332.43	6,562.9	165.9	-919.4	-933.2	8.38
7,198.0	91.01	332.60	6,559.8	248.4	-962.3	-986.7	2.00
7,291.0	88.02	331.37	6,560.6	330.5	-1,005.9	-1,040.8	3.48

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EOW Completion Report



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Site:	Ahouse / Callie Pad	MD Reference:	Pre 522 Callie 1H 1005 GL + 18 KB @ 1023.0usft
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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)
7,383.0	88.11	332.34	6,563.7	411.5	-1,049.3	-1,094.5	1.06
7,476.0	91.10	333.31	6,564.3	494.3	-1,091.8	-1,147.6	3.38
7,571.0	91.98	333.75	6,561.8	579.3	-1,134.1	-1,200.8	1.04
7,665.0	91.54	333.57	6,558.9	663.5	-1,175.8	-1,253.2	0.51
7,760.0	91.01	333.48	6,556.8	748.5	-1,218.1	-1,306.4	0.57
7,855.0	90.84	333.13	6,555.2	833.4	-1,260.8	-1,360.0	0.41
7,949.0	91.01	335.06	6,553.7	917.9	-1,301.9	-1,411.8	2.06
8,044.0	91.01	334.10	6,552.0	1,003.7	-1,342.6	-1,463.6	1.01
8,138.0	88.64	334.71	6,552.3	1,088.5	-1,383.2	-1,515.1	2.60
8,232.0	88.37	334.01	6,554.8	1,173.2	-1,423.9	-1,566.6	0.80
8,327.0	88.72	334.10	6,557.2	1,258.6	-1,465.5	-1,619.0	0.38
8,421.0	88.99	334.98	6,559.1	1,343.4	-1,505.9	-1,670.3	0.98
8,515.0	90.13	336.47	6,559.8	1,429.1	-1,544.5	-1,719.9	2.00
8,607.0	89.87	335.24	6,559.8	1,513.1	-1,582.1	-1,768.3	1.37
8,700.0	90.22	335.59	6,559.7	1,597.6	-1,620.8	-1,817.9	0.53
8,793.0	89.87	335.77	6,559.6	1,682.4	-1,659.1	-1,867.1	0.42
8,885.0	90.84	334.80	6,559.1	1,765.9	-1,697.6	-1,916.2	1.49
8,978.0	89.80	334.70	6,558.6	1,850.0	-1,737.3	-1,966.7	1.12
9,070.0	89.96	333.22	6,558.7	1,932.7	-1,777.6	-2,017.6	1.62
9,163.0	89.43	332.52	6,559.2	2,015.5	-1,820.1	-2,070.6	0.94
9,256.0	91.71	333.31	6,558.3	2,098.3	-1,862.4	-2,123.5	2.59
9,348.0	91.01	332.08	6,556.1	2,180.0	-1,904.6	-2,176.2	1.54
9,441.0	89.16	331.11	6,556.0	2,261.8	-1,948.8	-2,230.8	2.25
9,533.0	89.25	332.16	6,557.3	2,342.7	-1,992.5	-2,284.9	1.15
9,626.0	89.25	331.64	6,558.5	2,424.8	-2,036.3	-2,339.1	0.56
9,719.0	90.57	334.36	6,558.6	2,507.6	-2,078.5	-2,391.9	3.25
9,811.0	90.57	333.75	6,557.7	2,590.3	-2,118.8	-2,442.8	0.66
9,904.0	89.43	334.10	6,557.7	2,673.9	-2,159.7	-2,494.3	1.28
9,997.0	89.46	334.17	6,558.6	2,757.6	-2,200.2	-2,545.6	0.08
10,089.0	89.25	333.48	6,559.7	2,840.1	-2,240.8	-2,596.8	0.78
10,182.0	88.99	334.36	6,561.1	2,923.6	-2,281.7	-2,648.3	0.99
10,274.0	90.66	336.21	6,561.4	3,007.2	-2,320.2	-2,697.5	2.71
10,367.0	90.92	335.77	6,560.1	3,092.1	-2,358.0	-2,746.2	0.55
10,460.0	91.36	335.68	6,558.2	3,176.9	-2,396.2	-2,795.3	0.48
10,552.0	91.01	336.12	6,556.3	3,260.9	-2,433.8	-2,843.7	0.61
10,645.0	90.31	334.10	6,555.3	3,345.2	-2,472.9	-2,893.6	2.30
10,738.0	88.64	332.96	6,556.1	3,428.5	-2,514.4	-2,945.7	2.17
10,830.0	88.99	333.22	6,558.0	3,510.5	-2,556.0	-2,997.8	0.47
10,923.0	89.69	333.66	6,559.1	3,593.7	-2,597.6	-3,050.0	0.89
11,015.0	89.78	332.87	6,559.5	3,675.8	-2,639.0	-3,101.9	0.86
11,108.0	90.66	332.69	6,559.2	3,758.5	-2,681.5	-3,155.0	0.97
11,201.0	91.28	330.49	6,557.6	3,840.3	-2,725.7	-3,209.7	2.46
11,293.0	91.10	331.29	6,555.7	3,920.7	-2,770.5	-3,264.7	0.89
11,386.0	90.84	333.04	6,554.1	4,002.9	-2,813.9	-3,318.6	1.90

AUG 10 2015



WV GEOLOGICAL SURVEY EOW Completion Report
MORGANTOWN, WV



Company: Antero Resources	Local Co-ordinate Reference: Well Callie Unit 1H
Project: Doddridge County WV	TVD Reference: Pre 522 Callie 1H 1005 GL + 18 KB @ 1023.0usft
Site: Ahouse / Callie Pad	MD Reference: Pre 522 Callie 1H 1005 GL + 18 KB @ 1023.0usft
Well: Callie 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)
11,479.0	90.84	332.43	6,552.7	4,085.5	-2,856.5	-3,371.7	0.66
11,571.0	89.78	332.34	6,552.2	4,167.1	-2,899.1	-3,424.8	1.16
11,664.0	89.08	333.66	6,553.2	4,249.9	-2,941.4	-3,477.6	1.61
11,757.0	90.84	335.68	6,553.2	4,334.0	-2,981.1	-3,528.2	2.88
11,849.0	91.71	336.03	6,551.2	4,417.9	-3,018.8	-3,576.5	1.02
11,942.0	91.45	335.77	6,548.6	4,502.8	-3,056.7	-3,625.4	0.40
12,035.0	90.40	336.03	6,547.1	4,587.6	-3,094.7	-3,674.3	1.16
12,127.0	89.69	334.36	6,547.0	4,671.2	-3,133.3	-3,723.6	1.97
12,220.0	89.52	333.39	6,547.7	4,754.7	-3,174.2	-3,775.2	1.06
12,313.0	90.84	332.43	6,547.4	4,837.4	-3,216.6	-3,828.1	1.76
12,405.0	91.45	333.31	6,545.5	4,919.3	-3,258.5	-3,880.5	1.16
12,498.0	90.22	334.36	6,544.2	5,002.8	-3,299.5	-3,932.2	1.74
12,590.0	90.04	334.36	6,544.0	5,085.7	-3,339.3	-3,982.6	0.20
12,683.0	90.66	334.45	6,543.4	5,169.6	-3,379.5	-4,033.5	0.67
12,776.0	90.48	333.57	6,542.5	5,253.2	-3,420.3	-4,085.0	0.97
12,868.0	90.84	333.48	6,541.4	5,335.5	-3,461.3	-4,136.5	0.40
12,905.0	91.19	332.78	6,540.8	5,368.5	-3,478.0	-4,157.5	2.11
12,965.0	91.19	332.78	6,539.5	5,421.9	-3,505.4	-4,191.7	0.00

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
6,535.0	6,361.1	-217.7	-587.6	Middlesex
6,745.0	6,480.6	-118.6	-727.7	Burkett
6,804.0	6,506.9	-81.9	-765.6	Tully
6,891.0	6,536.3	-18.7	-817.4	Marcellus

Checked By: _____ Approved By: _____ Date: _____