

JUN 08 2015

WV GEOLOGICAL SURVEY

MORGANTOWN, WV



Antero Resources
 Grimsdale Unit 2H
 Doddridge County WV
 Northing: 14231091.82
 Easting: 1721350.55
 As Drilled

WELL DETAILS: Grimsdale Unit 2H

+N/S	+E/W	Northing	Easting	Latitude	Longitude	SIR
0.0	0.0	14231091.82	1721350.55	39° 11' 22.433 N	80° 42' 51.991 W	

REFERENCE INFORMATION

Coordinate (NAD) Reference: Well Grimsdale Unit 2H, 09/11/09
 Vertical (VD) Reference: Grimsdale Unit 2H 1189' RL + 22.8' RSL @ 1180' SLW
 Measured Depth Reference: Grimsdale Unit 2H 1189' RL + 22.8' RSL @ 1180' SLW
 Canadian Datum: International Continental

PROJECT DETAILS: Doddridge County, WV

Geoid System: Universal Transverse Mercator (US Survey Feet)
 Datum: NAD 1983 (NAD80 CONUS)
 Ellipsoid: GRS 80 (1980 WGS 84)
 Zone: 50N 17N (16W to 18 W)
 System Datum: Mean Sea Level



Scientific Drilling

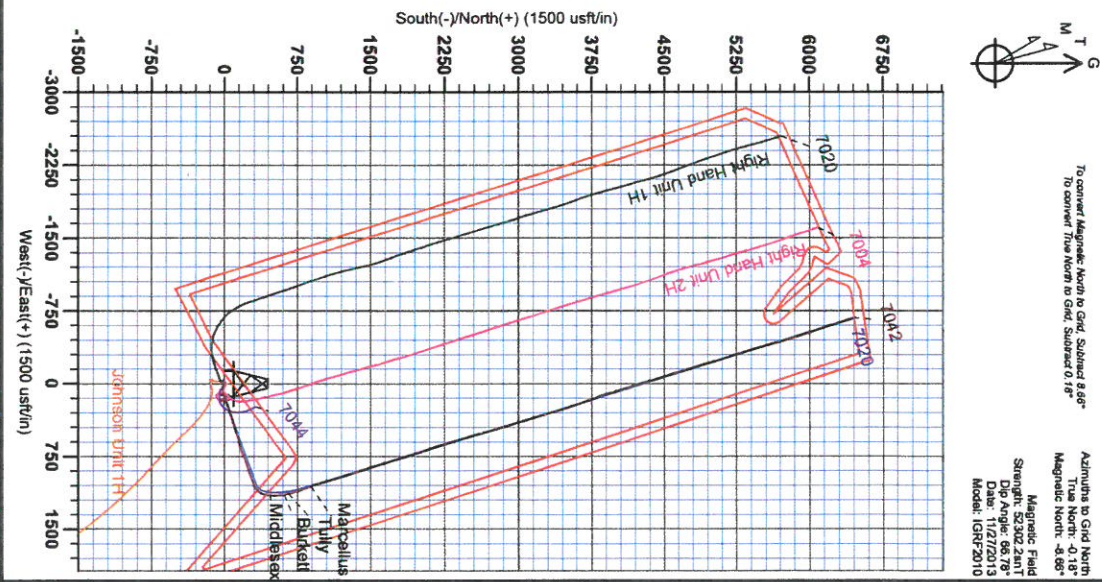
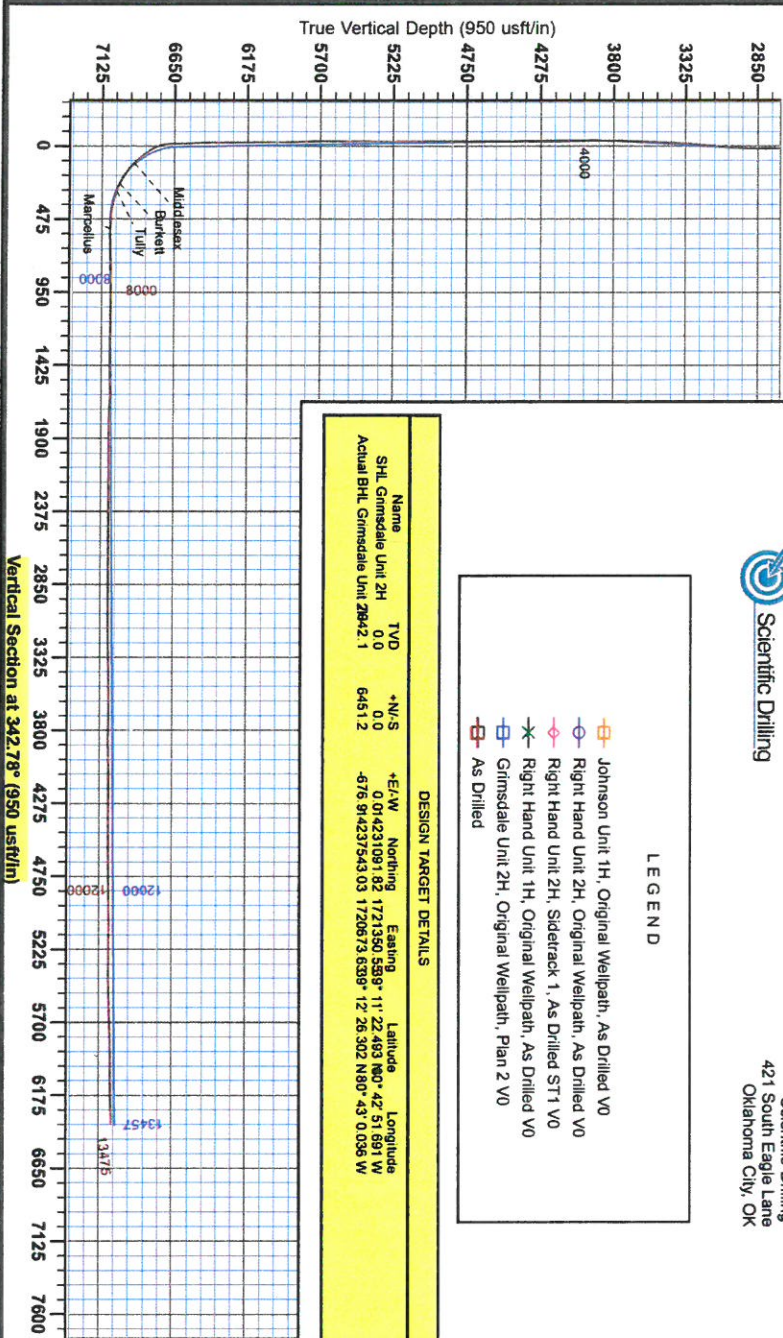
Genie Lightfoot
 9:45, December 30 2013
 Scientific Drilling
 421 South Eagle Lane
 Oklahoma City, OK

LEGEND

- Johnson Unit 1H, Original Wellpath, As Drilled VO
- Right Hand Unit 2H, Original Wellpath, As Drilled VO
- Right Hand Unit 2H, Sidetrack 1, As Drilled ST 1 VO
- Right Hand Unit 1H, Original Wellpath, As Drilled VO
- Grimsdale Unit 2H, Original Wellpath, Plan 2 VO
- As Drilled

DESIGN TARGET DETAILS

Name	TVD	+N/S	+E/W	Northing	Easting	Latitude	Longitude
Shl. Grimsdale Unit 2H	0.0	0.0	0.0	074231091.82	1721350.55	39° 11' 22.483 N	80° 42' 51.991 W
Actual BHL Grimsdale Unit 2H#2-1	6451.2	0.0	-0.76	914237543.03	1720973.639	39° 12' 26.302 N	80° 43' 0.036 W



To convert Magnetic North to Grid, Subtract 8.8°
 To convert True North to Grid, Subtract 0.18°

Azimuth to Grid North
 True North: -0.18°
 Magnetic North: -8.8°

Magnetic Field
 Strength: 52.02 ZmT
 Date: 11/27/2013
 Model: IGRF2010



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WV GEOLOGICAL SURVEY
MORGANTOWN, WV

Antero Resources

Doddridge County WV

Richard Garry Pad /Johnson/Right Hand/Grimsdale

Grimsdale Unit 2H

Original Wellpath

Design: As Drilled

EOW Completion Report

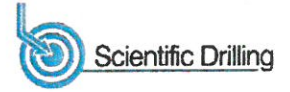
30 December, 2013



JUN 08 2015



EOW Completion Report



Company: Antero Resources	Local Co-ordinate Reference: Well Grimsdale Unit 2H
Project: Doddridge County WV	TVD Reference: Grimsdale Unit 2H 1158' GL + 22.5' RKB @ 1180.
Site: Richard Garry Pad /Johnson/Right Hand/Grimsdale	MD Reference: Grimsdale Unit 2H 1158' GL + 22.5' RKB @ 1180.
Well: Grimsdale 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	Richard Garry Pad /Johnson/Right Hand/Grimsdale		
Site Position:	Northing:	14,231,051.36 usft	Latitude: 39° 11' 22.094 N
From: Map	Easting:	1,721,322.23 usft	Longitude: 80° 42' 52.053 W
Position Uncertainty: 2.0 usft	Slot Radius: 13-3/16"		Grid Convergence: 0.18 °

Well	Grimsdale Unit 2H, Marcellus		
Well Position	+N/-S 0.0 usft	Northing: 14,231,091.82 usft	Latitude: 39° 11' 22.493 N
	+E/-W 0.0 usft	Easting: 1,721,350.55 usft	Longitude: 80° 42' 51.691 W
Position Uncertainty 2.0 usft	Wellhead Elevation: 1,180.5 usft	Ground Level: 1,158.0 usft	

Wellbore Original Wellpath

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/27/2013	-8.48	66.78	52,302

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	342.78

Survey Program		Date			
From (usft)	To (usft)	12/30/2013	Survey (Wellbore)	Tool Name	Description
100.0	5,405.3		Survey #4 Gyro to 5405.28 (Original Wellp	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
5,445.0	13,475.0		Survey #5 MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. 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
100.0	0.16	268.75	100.0	0.0	-0.1	0.0	0.16
200.0	0.18	224.31	200.0	-0.1	-0.4	0.0	0.13
300.0	0.23	246.87	300.0	-0.3	-0.7	-0.1	0.09
400.0	0.32	271.10	400.0	-0.4	-1.1	0.0	0.15
500.0	0.43	307.15	500.0	-0.2	-1.7	0.4	0.25
600.0	0.29	356.25	600.0	0.3	-2.0	0.9	0.33
700.0	0.27	280.41	700.0	0.6	-2.3	1.3	0.34
800.0	0.41	311.75	800.0	0.9	-2.8	1.7	0.23
900.0	0.18	12.63	900.0	1.3	-3.0	2.1	0.36
1,000.0	0.13	273.79	1,000.0	1.5	-3.1	2.3	0.24



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Site: Richard Garry Pad /Johnson/Right Hand/Grimsdale	MD Reference: Grimsdale Unit 2H 1158' GL + 22.5' RKB @ 1180
Well: Grimsdale Unit 2H	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)
1,100.0	0.46	327.49	1,100.0	1.8	-3.4	2.7	0.40
1,200.0	0.36	345.06	1,200.0	2.4	-3.7	3.4	0.16
1,300.0	0.25	320.09	1,300.0	2.9	-3.9	4.0	0.17
1,400.0	0.70	305.89	1,400.0	3.4	-4.6	4.6	0.46
1,500.0	0.63	311.44	1,500.0	4.2	-5.5	5.6	0.10
1,600.0	0.68	285.70	1,600.0	4.7	-6.5	6.4	0.30
1,700.0	0.63	311.80	1,700.0	5.2	-7.5	7.2	0.30
1,800.0	0.24	288.02	1,800.0	5.6	-8.1	7.8	0.42
1,900.0	0.33	283.15	1,900.0	5.8	-8.5	8.0	0.09
2,000.0	0.66	285.51	2,000.0	6.0	-9.4	8.5	0.33
2,100.0	0.61	295.13	2,099.9	6.4	-10.4	9.2	0.12
2,200.0	0.30	337.90	2,199.9	6.8	-11.0	9.8	0.44
2,300.0	0.49	298.95	2,299.9	7.3	-11.5	10.4	0.32
2,400.0	0.48	309.16	2,399.9	7.8	-12.2	11.0	0.09
2,500.0	0.47	289.30	2,499.9	8.2	-12.9	11.6	0.16
2,600.0	0.62	292.02	2,599.9	8.5	-13.8	12.2	0.15
2,700.0	0.74	283.02	2,699.9	8.9	-14.9	12.9	0.16
2,800.0	0.59	293.83	2,799.9	9.2	-16.0	13.5	0.19
2,900.0	3.45	107.27	2,899.9	8.5	-13.6	12.2	4.04
3,000.0	4.81	115.64	2,999.6	5.8	-6.9	7.6	1.48
3,100.0	5.95	120.58	3,099.2	1.4	1.3	0.9	1.23
3,200.0	6.33	120.30	3,198.6	-4.1	10.5	-7.0	0.38
3,300.0	6.21	122.87	3,298.0	-9.8	19.8	-15.2	0.31
3,400.0	5.79	118.89	3,397.4	-15.1	28.8	-23.0	0.59
3,500.0	5.51	90.95	3,497.0	-17.7	38.0	-28.1	2.74
3,600.0	8.07	83.79	3,596.3	-17.0	49.8	-31.0	2.69
3,700.0	10.60	85.42	3,694.9	-15.5	65.9	-34.3	2.54
3,800.0	12.82	74.38	3,792.9	-11.8	85.8	-36.6	3.14
3,900.0	15.45	71.24	3,889.8	-4.5	109.1	-36.6	2.74
4,000.0	17.33	69.29	3,985.8	5.1	135.6	-35.3	1.96
4,100.0	19.28	68.93	4,080.7	16.3	165.0	-33.3	1.95
4,200.0	19.72	69.16	4,175.0	28.2	196.2	-31.1	0.45
4,300.0	18.92	74.95	4,269.3	38.4	227.6	-30.7	2.07
4,400.0	18.82	74.33	4,364.0	47.0	258.8	-31.7	0.22
4,500.0	18.94	73.18	4,458.6	56.0	289.8	-32.3	0.39
4,600.0	20.32	73.40	4,552.8	65.7	322.0	-32.6	1.38
4,700.0	20.70	72.69	4,646.4	75.9	355.5	-32.7	0.45
4,800.0	20.12	72.59	4,740.1	86.3	388.8	-32.7	0.58
4,900.0	19.35	75.12	4,834.3	95.7	421.2	-33.3	1.15
5,000.0	17.89	75.18	4,929.0	103.9	452.1	-34.6	1.46
5,100.0	17.75	69.77	5,024.2	113.1	481.2	-34.4	1.66
5,200.0	16.61	67.69	5,119.8	123.8	508.8	-32.4	1.29
5,300.0	17.85	70.67	5,215.3	134.3	536.5	-30.5	1.52
5,400.0	15.84	73.03	5,311.0	143.3	564.0	-30.0	2.12

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EOW Completion Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Grimsdale Unit 2H
Project:	Doddridge County WV	TVD Reference:	Grimsdale Unit 2H 1158' GL + 22.5' RKB @ 1180
Site:	Richard Garry Pad /Johnson/Right Hand/Grimsda	MD Reference:	Grimsdale Unit 2H 1158' GL + 22.5' RKB @ 1180.
Well:	Grimsdale Unit 2H	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)
5,405.3	15.72	73.85	5,316.1	143.8	565.4	-30.1	4.80
5,445.0	15.82	76.91	5,354.3	146.5	575.8	-30.5	2.11
5,500.0	16.44	75.01	5,407.1	150.2	590.6	-31.4	1.48
5,594.0	21.54	73.52	5,496.0	158.5	620.0	-32.1	5.45
5,688.0	20.14	73.34	5,583.8	168.1	652.1	-32.5	1.49
5,782.0	21.39	72.74	5,671.7	177.8	684.0	-32.7	1.35
5,876.0	19.61	66.40	5,759.8	189.2	714.8	-30.9	3.02
5,970.0	17.41	67.28	5,848.9	200.9	742.2	-27.8	2.36
6,064.0	16.18	72.03	5,938.9	210.4	767.6	-26.3	1.96
6,158.0	16.62	72.03	6,029.1	218.6	792.9	-25.9	0.47
6,253.0	18.91	72.03	6,119.6	227.5	820.5	-25.5	2.41
6,347.0	21.81	71.85	6,207.7	237.7	851.6	-25.1	3.09
6,440.0	21.96	72.86	6,294.0	248.2	884.6	-24.8	0.44
6,535.0	20.75	71.76	6,382.5	258.7	917.5	-24.5	1.34
6,629.0	21.81	67.72	6,470.0	270.5	949.5	-22.7	1.92
6,660.0	22.16	66.22	6,498.8	275.1	960.2	-21.5	2.13
6,723.0	26.03	68.77	6,556.3	284.9	984.0	-19.2	6.36
6,817.0	31.83	70.53	6,638.5	300.6	1,026.6	-16.8	6.24
6,849.0	31.57	69.83	6,665.8	306.3	1,042.4	-16.0	1.41
6,880.0	32.86	65.95	6,692.0	312.5	1,057.7	-14.6	7.86
6,911.0	34.82	58.84	6,717.7	320.6	1,073.0	-11.5	14.24
6,943.0	37.89	50.76	6,743.5	331.5	1,088.4	-5.6	17.76
6,974.0	40.89	43.55	6,767.5	344.9	1,102.8	3.0	17.64
7,005.0	41.42	36.17	6,790.8	360.5	1,115.8	14.0	15.75
7,037.0	41.89	28.43	6,814.8	378.5	1,127.2	27.8	16.14
7,068.0	41.68	20.08	6,837.9	397.3	1,135.7	43.3	17.95
7,099.0	42.03	13.49	6,861.0	417.1	1,141.6	60.4	14.22
7,130.0	43.53	7.43	6,883.8	437.8	1,145.4	79.0	14.13
7,160.0	46.17	5.67	6,905.0	458.8	1,147.8	98.4	9.72
7,176.0	47.72	5.00	6,916.0	470.4	1,148.9	109.2	10.13
Middlesex							
7,190.0	49.07	4.44	6,925.3	480.8	1,149.8	118.9	10.13
7,221.0	52.76	2.33	6,944.8	504.9	1,151.2	141.4	13.02
7,251.0	56.01	359.43	6,962.3	529.2	1,151.5	164.6	13.38
7,282.0	59.05	356.03	6,978.9	555.4	1,150.5	189.9	13.48
7,313.0	61.91	352.84	6,994.2	582.2	1,147.9	216.3	12.86
7,343.0	65.16	350.73	7,007.6	608.8	1,144.0	242.8	12.53
7,344.0	65.24	350.66	7,008.0	609.7	1,143.9	243.7	10.02
Burkett							
7,373.0	67.53	348.71	7,019.6	635.8	1,139.1	270.1	10.02
7,396.0	69.48	347.82	7,028.0	656.8	1,134.8	291.4	9.22
Tully							
7,403.0	70.08	347.56	7,030.4	663.2	1,133.4	297.9	9.22
7,434.0	73.51	347.04	7,040.1	691.9	1,126.9	327.3	11.18
7,464.0	77.03	345.98	7,047.8	720.1	1,120.1	356.2	12.22

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EOW Completion Report



Company: Antero Resources
Project: Doddridge County WV
Site: Richard Garry Pad /Johnson/Right Hand/Grimsdale
Well: Grimsdale Unit 2H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Grimsdale Unit 2H
TVD Reference: Grimsdale Unit 2H 1158' GL + 22.5' RKB @ 1180.
MD Reference: Grimsdale Unit 2H 1158' GL + 22.5' RKB @ 1180.
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)
7,495.0	77.91	344.05	7,054.5	749.3	1,112.3	386.5	6.71
7,526.0	79.49	339.74	7,060.6	778.2	1,102.9	416.8	14.55
7,556.0	83.71	337.72	7,064.9	805.9	1,092.1	446.4	15.56
7,580.0	87.23	337.72	7,066.8	828.0	1,083.0	470.3	14.67
7,648.0	87.42	340.51	7,070.0	891.5	1,058.8	538.1	4.11
Marcellus							
7,672.0	87.49	341.50	7,071.1	914.1	1,051.0	562.0	4.11
7,763.0	93.65	343.78	7,070.2	1,000.9	1,023.9	653.0	7.22
7,854.0	92.42	343.87	7,065.3	1,088.2	998.6	743.8	1.36
7,946.0	89.52	344.05	7,063.8	1,176.6	973.1	835.8	3.16
8,037.0	90.22	341.85	7,064.0	1,263.6	946.5	926.8	2.54
8,129.0	89.96	341.41	7,063.9	1,350.9	917.5	1,018.7	0.56
8,220.0	88.55	341.06	7,065.0	1,437.1	888.2	1,109.7	1.60
8,315.0	88.55	340.80	7,067.4	1,526.8	857.2	1,204.6	0.27
8,410.0	89.60	342.46	7,069.0	1,617.0	827.2	1,299.6	2.07
8,505.0	89.25	341.85	7,069.9	1,707.4	798.1	1,394.6	0.74
8,599.0	91.72	343.94	7,069.1	1,797.2	770.5	1,488.6	3.44
8,694.0	90.75	342.99	7,067.1	1,888.3	743.5	1,583.5	1.43
8,789.0	87.85	340.88	7,068.2	1,978.6	714.0	1,678.5	3.77
8,884.0	87.41	340.62	7,072.2	2,068.2	682.7	1,773.4	0.54
8,979.0	90.48	341.85	7,073.9	2,158.1	652.2	1,868.3	3.48
9,074.0	90.67	341.87	7,073.0	2,248.4	622.6	1,963.3	0.20
9,169.0	89.69	344.13	7,072.7	2,339.2	594.8	2,058.3	2.59
9,264.0	90.17	343.42	7,072.8	2,430.4	568.3	2,153.3	0.90
9,358.0	90.31	343.17	7,072.4	2,520.5	541.2	2,247.2	0.30
9,453.0	88.81	343.17	7,073.1	2,611.4	513.7	2,342.2	1.58
9,548.0	90.57	345.54	7,073.6	2,702.9	488.1	2,437.2	3.11
9,643.0	90.84	345.28	7,072.5	2,794.8	464.2	2,532.1	0.39
9,738.0	89.60	342.11	7,072.1	2,885.9	437.5	2,627.1	3.58
9,833.0	90.48	342.99	7,072.0	2,976.6	409.0	2,722.1	1.31
9,928.0	89.43	342.83	7,072.1	3,067.4	381.1	2,817.1	1.12
10,023.0	89.69	342.55	7,072.8	3,158.1	352.9	2,912.1	0.40
10,117.0	90.84	343.87	7,072.4	3,248.1	325.7	3,006.0	1.86
10,212.0	89.78	343.52	7,071.9	3,339.2	299.0	3,101.0	1.18
10,308.0	90.75	344.40	7,071.4	3,431.5	272.5	3,197.0	1.36
10,403.0	90.04	339.83	7,070.8	3,521.9	243.3	3,292.0	4.87
10,498.0	90.84	340.80	7,070.1	3,611.3	211.3	3,386.9	1.32
10,593.0	90.92	339.65	7,068.6	3,700.7	179.2	3,481.8	1.21
10,687.0	91.36	339.21	7,066.7	3,788.7	146.2	3,575.6	0.66
10,782.0	88.55	342.38	7,066.8	3,878.4	114.9	3,670.5	4.46
10,877.0	88.81	342.03	7,069.0	3,968.8	85.9	3,765.5	0.46
10,972.0	90.66	343.61	7,069.4	4,059.6	57.9	3,860.5	2.56
11,067.0	91.01	343.41	7,068.1	4,150.7	30.9	3,955.5	0.42
11,162.0	91.28	342.55	7,066.2	4,241.5	3.1	4,050.4	0.95

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EOW Completion Report



Company: Antero Resources	Local Co-ordinate Reference: Well Grimsdale Unit 2H
Project: Doddridge County WV	TVD Reference: Grimsdale Unit 2H 1158' GL + 22.5' RKB @ 1180
Site: Richard Garry Pad /Johnson/Right Hand/Grimsda	MD Reference: Grimsdale Unit 2H 1158' GL + 22.5' RKB @ 1180
Well: Grimsdale Unit 2H	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)
11,257.0	89.87	343.43	7,065.2	4,332.3	-24.7	4,145.4	1.75
11,352.0	89.87	342.55	7,065.4	4,423.2	-52.5	4,240.4	0.93
11,447.0	90.22	342.82	7,065.3	4,513.8	-80.8	4,335.4	0.47
11,542.0	89.69	343.87	7,065.4	4,604.9	-108.0	4,430.4	1.24
11,637.0	90.13	343.61	7,065.6	4,696.1	-134.6	4,525.4	0.54
11,732.0	90.84	343.26	7,064.8	4,787.1	-161.7	4,620.4	0.83
11,827.0	91.45	342.90	7,062.9	4,878.0	-189.3	4,715.4	0.75
11,922.0	89.34	343.61	7,062.2	4,968.9	-216.7	4,810.4	2.34
12,017.0	90.48	343.17	7,062.4	5,060.0	-243.8	4,905.4	1.29
12,117.0	91.24	342.95	7,060.9	5,155.6	-273.0	5,005.3	0.79
12,207.0	89.60	343.61	7,060.2	5,241.8	-298.9	5,095.3	1.96
12,302.0	89.43	342.03	7,061.0	5,332.6	-326.9	5,190.3	1.67
12,397.0	90.22	341.85	7,061.3	5,422.9	-356.4	5,285.3	0.85
12,492.0	89.16	344.66	7,061.8	5,513.9	-383.7	5,380.3	3.16
12,586.0	91.10	345.98	7,061.6	5,604.8	-407.6	5,474.2	2.50
12,681.0	92.59	346.24	7,058.5	5,697.0	-430.3	5,569.0	1.59
12,776.0	91.45	343.08	7,055.2	5,788.5	-455.5	5,663.9	3.53
12,871.0	92.15	342.55	7,052.2	5,879.2	-483.5	5,758.8	0.92
12,966.0	90.34	341.35	7,050.1	5,969.5	-512.9	5,853.8	2.29
13,061.0	90.13	339.83	7,049.7	6,059.1	-544.5	5,948.7	1.62
13,155.0	90.31	340.09	7,049.4	6,147.4	-576.7	6,042.6	0.34
13,250.0	91.80	342.64	7,047.6	6,237.4	-607.1	6,137.5	3.11
13,345.0	91.63	341.94	7,044.8	6,327.9	-636.0	6,232.5	0.76
13,422.0	91.01	341.50	7,043.0	6,401.0	-660.1	6,309.5	0.99
13,475.0	91.00	341.50	7,042.1	6,451.2	-676.9	6,362.4	0.02

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,176.0	6,916.0	470.4	1,148.9	Middlesex
7,344.0	7,008.0	609.7	1,143.9	Burkett
7,396.0	7,028.0	656.8	1,134.8	Tully
7,648.0	7,070.0	891.5	1,058.8	Marcellus

Checked By: _____ Approved By: _____ Date: _____



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WV GEOLOGICAL SURVEY
MORGANTOWN, WV

Antero Resources

**Doddridge County WV
Richard Garry Pad /Johnson/Right Hand/Grimsdale
Grimsdale Unit 2H**

Original Wellpath

Design: As Drilled

Survey Report - Geographic

30 December, 2013



JUN 08 2015



Survey Report - Geographic



Company: Antero Resources	Local Co-ordinate Reference: Well Grimsdale Unit 2H
Project: Doddridge County WV	TVD Reference: Grimsdale Unit 2H 1158' GL + 22.5' RKB @ 1180.5usft
Site: Richard Garry Pad /Johnson/Right Hand/Grimsdale	MD Reference: Grimsdale Unit 2H 1158' GL + 22.5' RKB @ 1180.5usft
Well: Grimsdale 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 Richard Garry Pad /Johnson/Right Hand/Grimsdale			
Site Position:	Northing:	14,231,051.35 usft	Latitude: 39° 11' 22.094 N
From: Map	Easting:	1,721,322.23 usft	Longitude: 80° 42' 52.053 W
Position Uncertainty: 2.0 usft	Slot Radius:	13-3/16 "	Grid Convergence: 0.18 °

Well Grimsdale Unit 2H, Marcellus			
Well Position	+N/-S	0.0 usft	Northing: 14,231,091.82 usft
	+E/-W	0.0 usft	Easting: 1,721,350.55 usft
Position Uncertainty	2.0 usft	Wellhead Elevation:	1,180.5 usft
		Ground Level:	1,158.0 usft

Wellbore Original Wellpath					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/27/2013	-8.48	66.78	52,302

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	342.78	

Survey Program Date 12/30/2013					
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	5,405.3	Survey #4 Gyro to 5405.28 (Original Wellp	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper	
5,445.0	13,475.0	Survey #5 MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.0	0.00	0.00	0.0	0.0	0.0	14,231,091.82	1,721,350.55	39° 11' 22.493 N	80° 42' 51.691 W	
100.0	0.16	268.75	100.0	0.0	-0.1	14,231,091.81	1,721,350.41	39° 11' 22.493 N	80° 42' 51.693 W	
200.0	0.18	224.31	200.0	-0.1	-0.4	14,231,091.70	1,721,350.16	39° 11' 22.492 N	80° 42' 51.696 W	
300.0	0.23	246.87	300.0	-0.3	-0.7	14,231,091.51	1,721,349.87	39° 11' 22.490 N	80° 42' 51.700 W	
400.0	0.32	271.10	400.0	-0.4	-1.1	14,231,091.43	1,721,349.40	39° 11' 22.489 N	80° 42' 51.706 W	
500.0	0.43	307.15	500.0	-0.2	-1.7	14,231,091.67	1,721,348.83	39° 11' 22.492 N	80° 42' 51.713 W	
600.0	0.29	356.25	600.0	0.3	-2.0	14,231,092.14	1,721,348.51	39° 11' 22.496 N	80° 42' 51.717 W	
700.0	0.27	280.41	700.0	0.6	-2.3	14,231,092.44	1,721,348.26	39° 11' 22.499 N	80° 42' 51.720 W	
800.0	0.41	311.75	800.0	0.9	-2.8	14,231,092.72	1,721,347.76	39° 11' 22.502 N	80° 42' 51.727 W	

JUN 08 2015



Survey Report - Geographic



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MD Reference: Grimsdale Unit 2H 1158' GL + 22.5' RKB @ 1180.5usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Oklahoma District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
900.0	0.18	12.63	900.0	1.3	-3.0	14,231,093.11	1,721,347.53	39° 11' 22.506 N	80° 42' 51.730 W
1,000.0	0.13	273.79	1,000.0	1.5	-3.1	14,231,093.27	1,721,347.45	39° 11' 22.508 N	80° 42' 51.731 W
1,100.0	0.46	327.49	1,100.0	1.8	-3.4	14,231,093.62	1,721,347.12	39° 11' 22.511 N	80° 42' 51.735 W
1,200.0	0.36	345.06	1,200.0	2.4	-3.7	14,231,094.26	1,721,346.83	39° 11' 22.517 N	80° 42' 51.738 W
1,300.0	0.25	320.09	1,300.0	2.9	-3.9	14,231,094.73	1,721,346.60	39° 11' 22.522 N	80° 42' 51.741 W
1,400.0	0.70	305.89	1,400.0	3.4	-4.6	14,231,095.26	1,721,345.97	39° 11' 22.527 N	80° 42' 51.749 W
1,500.0	0.63	311.44	1,500.0	4.2	-5.5	14,231,095.98	1,721,345.06	39° 11' 22.534 N	80° 42' 51.761 W
1,600.0	0.68	285.70	1,600.0	4.7	-6.5	14,231,096.50	1,721,344.08	39° 11' 22.540 N	80° 42' 51.773 W
1,700.0	0.63	311.80	1,700.0	5.2	-7.5	14,231,097.03	1,721,343.10	39° 11' 22.545 N	80° 42' 51.786 W
1,800.0	0.24	288.02	1,800.0	5.6	-8.1	14,231,097.46	1,721,342.49	39° 11' 22.549 N	80° 42' 51.793 W
1,900.0	0.33	283.15	1,900.0	5.8	-8.5	14,231,097.59	1,721,342.01	39° 11' 22.550 N	80° 42' 51.800 W
2,000.0	0.66	285.51	2,000.0	6.0	-9.4	14,231,097.81	1,721,341.17	39° 11' 22.553 N	80° 42' 51.810 W
2,100.0	0.61	295.13	2,099.9	6.4	-10.4	14,231,098.19	1,721,340.14	39° 11' 22.556 N	80° 42' 51.823 W
2,200.0	0.30	337.90	2,199.9	6.8	-11.0	14,231,098.66	1,721,339.56	39° 11' 22.561 N	80° 42' 51.831 W
2,300.0	0.49	298.95	2,299.9	7.3	-11.5	14,231,099.11	1,721,339.08	39° 11' 22.566 N	80° 42' 51.837 W
2,400.0	0.48	309.16	2,399.9	7.8	-12.2	14,231,099.58	1,721,338.39	39° 11' 22.570 N	80° 42' 51.846 W
2,500.0	0.47	289.30	2,499.9	8.2	-12.9	14,231,099.98	1,721,337.67	39° 11' 22.574 N	80° 42' 51.855 W
2,600.0	0.62	292.02	2,599.9	8.5	-13.8	14,231,100.32	1,721,336.78	39° 11' 22.578 N	80° 42' 51.866 W
2,700.0	0.74	283.02	2,699.9	8.9	-14.9	14,231,100.67	1,721,335.65	39° 11' 22.581 N	80° 42' 51.880 W
2,800.0	0.59	293.83	2,799.9	9.2	-16.0	14,231,101.02	1,721,334.55	39° 11' 22.585 N	80° 42' 51.894 W
2,900.0	3.45	107.27	2,899.9	8.5	-13.6	14,231,100.34	1,721,336.96	39° 11' 22.578 N	80° 42' 51.864 W
3,000.0	4.81	115.64	2,999.6	5.8	-6.9	14,231,097.63	1,721,343.61	39° 11' 22.551 N	80° 42' 51.779 W
3,100.0	5.95	120.58	3,099.2	1.4	1.3	14,231,093.18	1,721,351.85	39° 11' 22.506 N	80° 42' 51.675 W
3,200.0	6.33	120.30	3,198.6	-4.1	10.5	14,231,087.76	1,721,361.07	39° 11' 22.453 N	80° 42' 51.558 W
3,300.0	6.21	122.87	3,298.0	-9.8	19.8	14,231,082.04	1,721,370.38	39° 11' 22.396 N	80° 42' 51.440 W
3,400.0	5.79	118.89	3,397.4	-15.1	28.8	14,231,076.67	1,721,379.34	39° 11' 22.342 N	80° 42' 51.326 W
3,500.0	5.51	90.95	3,497.0	-17.7	38.0	14,231,074.15	1,721,388.55	39° 11' 22.317 N	80° 42' 51.209 W
3,600.0	8.07	83.79	3,596.3	-17.0	49.8	14,231,074.83	1,721,400.34	39° 11' 22.324 N	80° 42' 51.059 W
3,700.0	10.60	85.42	3,694.9	-15.5	65.9	14,231,076.33	1,721,416.48	39° 11' 22.338 N	80° 42' 50.854 W
3,800.0	12.82	74.38	3,792.9	-11.8	85.8	14,231,080.05	1,721,436.34	39° 11' 22.374 N	80° 42' 50.602 W
3,900.0	15.45	71.24	3,889.8	-4.5	109.1	14,231,087.32	1,721,459.64	39° 11' 22.445 N	80° 42' 50.305 W
4,000.0	17.33	69.29	3,985.8	5.1	135.6	14,231,096.87	1,721,486.19	39° 11' 22.539 N	80° 42' 49.968 W
4,100.0	19.28	68.93	4,080.7	16.3	165.0	14,231,108.08	1,721,515.53	39° 11' 22.649 N	80° 42' 49.594 W
4,200.0	19.72	69.16	4,175.0	28.2	196.2	14,231,120.01	1,721,546.70	39° 11' 22.766 N	80° 42' 49.198 W
4,300.0	18.92	74.95	4,269.3	38.4	227.6	14,231,130.23	1,721,578.13	39° 11' 22.866 N	80° 42' 48.798 W
4,400.0	18.82	74.33	4,364.0	47.0	258.8	14,231,138.79	1,721,609.32	39° 11' 22.949 N	80° 42' 48.402 W
4,500.0	18.94	73.18	4,458.6	56.0	289.8	14,231,147.85	1,721,640.38	39° 11' 23.038 N	80° 42' 48.007 W
4,600.0	20.32	73.40	4,552.8	65.7	322.0	14,231,157.50	1,721,672.56	39° 11' 23.133 N	80° 42' 47.597 W
4,700.0	20.70	72.69	4,646.4	75.9	355.5	14,231,167.72	1,721,706.07	39° 11' 23.233 N	80° 42' 47.171 W
4,800.0	20.12	72.59	4,740.1	86.3	388.8	14,231,178.13	1,721,739.35	39° 11' 23.334 N	80° 42' 46.748 W
4,900.0	19.35	75.12	4,834.3	95.7	421.2	14,231,187.53	1,721,771.78	39° 11' 23.426 N	80° 42' 46.336 W
5,000.0	17.89	75.18	4,929.0	103.9	452.1	14,231,195.71	1,721,802.64	39° 11' 23.506 N	80° 42' 45.943 W
5,100.0	17.75	69.77	5,024.2	113.1	481.2	14,231,204.91	1,721,831.79	39° 11' 23.596 N	80° 42' 45.572 W
5,200.0	16.61	67.69	5,119.8	123.8	508.8	14,231,215.61	1,721,859.32	39° 11' 23.701 N	80° 42' 45.222 W
5,300.0	17.85	70.67	5,215.3	134.3	536.5	14,231,226.11	1,721,887.01	39° 11' 23.804 N	80° 42' 44.870 W
5,400.0	15.84	73.03	5,311.0	143.3	564.0	14,231,235.17	1,721,914.53	39° 11' 23.893 N	80° 42' 44.520 W
5,405.3	15.72	73.85	5,316.1	143.8	565.4	14,231,235.58	1,721,915.90	39° 11' 23.897 N	80° 42' 44.502 W
5,445.0	15.82	76.91	5,354.3	146.5	575.8	14,231,238.30	1,721,926.34	39° 11' 23.923 N	80° 42' 44.370 W
5,500.0	16.44	75.01	5,407.1	150.2	590.6	14,231,242.01	1,721,941.16	39° 11' 23.960 N	80° 42' 44.181 W
5,594.0	21.54	73.52	5,496.0	158.5	620.0	14,231,250.35	1,721,970.58	39° 11' 24.041 N	80° 42' 43.807 W
5,688.0	20.14	73.34	5,583.8	168.1	652.1	14,231,259.89	1,722,002.63	39° 11' 24.134 N	80° 42' 43.400 W
5,782.0	21.39	72.74	5,671.7	177.8	684.0	14,231,269.61	1,722,034.51	39° 11' 24.230 N	80° 42' 42.994 W
5,876.0	19.61	66.40	5,759.8	189.2	714.8	14,231,281.02	1,722,065.34	39° 11' 24.341 N	80° 42' 42.602 W



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Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,970.0	17.41	67.28	5,848.9	200.9	742.2	14,231,292.76	1,722,092.77	39° 11' 24.457 N	80° 42' 42.253 W
6,064.0	16.18	72.03	5,938.9	210.4	767.6	14,231,302.24	1,722,118.20	39° 11' 24.550 N	80° 42' 41.929 W
6,158.0	16.62	72.03	6,029.1	218.6	792.9	14,231,310.42	1,722,143.44	39° 11' 24.630 N	80° 42' 41.608 W
6,253.0	18.91	72.03	6,119.6	227.5	820.5	14,231,319.37	1,722,171.01	39° 11' 24.717 N	80° 42' 41.258 W
6,347.0	21.81	71.85	6,207.7	237.7	851.6	14,231,329.51	1,722,202.10	39° 11' 24.817 N	80° 42' 40.862 W
6,440.0	21.96	72.86	6,294.0	248.2	884.6	14,231,340.01	1,722,235.14	39° 11' 24.919 N	80° 42' 40.442 W
6,535.0	20.75	71.76	6,382.5	258.7	917.5	14,231,350.52	1,722,268.10	39° 11' 25.022 N	80° 42' 40.023 W
6,629.0	21.81	67.72	6,470.0	270.5	949.5	14,231,362.35	1,722,300.07	39° 11' 25.138 N	80° 42' 39.616 W
6,660.0	22.16	66.22	6,498.8	275.1	960.2	14,231,366.89	1,722,310.75	39° 11' 25.183 N	80° 42' 39.480 W
6,723.0	26.03	68.77	6,556.3	284.9	984.0	14,231,376.69	1,722,334.52	39° 11' 25.279 N	80° 42' 39.178 W
6,817.0	31.83	70.53	6,638.5	300.6	1,026.6	14,231,392.44	1,722,377.15	39° 11' 25.433 N	80° 42' 38.636 W
6,849.0	31.57	69.83	6,665.8	306.3	1,042.4	14,231,398.14	1,722,392.97	39° 11' 25.489 N	80° 42' 38.434 W
6,880.0	32.86	65.95	6,692.0	312.5	1,057.7	14,231,404.36	1,722,408.27	39° 11' 25.550 N	80° 42' 38.240 W
6,911.0	34.82	58.84	6,717.7	320.6	1,073.0	14,231,412.37	1,722,423.53	39° 11' 25.629 N	80° 42' 38.046 W
6,943.0	37.89	50.76	6,743.5	331.5	1,088.4	14,231,423.33	1,722,438.97	39° 11' 25.737 N	80° 42' 37.849 W
6,974.0	40.89	43.55	6,767.5	344.9	1,102.8	14,231,436.71	1,722,453.35	39° 11' 25.869 N	80° 42' 37.666 W
7,005.0	41.42	36.17	6,790.8	360.5	1,115.8	14,231,452.35	1,722,466.40	39° 11' 26.023 N	80° 42' 37.499 W
7,037.0	41.89	28.43	6,814.8	378.5	1,127.2	14,231,470.31	1,722,477.74	39° 11' 26.200 N	80° 42' 37.355 W
7,068.0	41.68	20.08	6,837.9	397.3	1,135.7	14,231,489.10	1,722,486.21	39° 11' 26.386 N	80° 42' 37.246 W
7,099.0	42.03	13.49	6,861.0	417.1	1,141.6	14,231,508.88	1,722,492.17	39° 11' 26.581 N	80° 42' 37.170 W
7,130.0	43.53	7.43	6,883.8	437.8	1,145.4	14,231,529.57	1,722,495.98	39° 11' 26.786 N	80° 42' 37.120 W
7,160.0	46.17	5.67	6,905.0	458.8	1,147.8	14,231,550.59	1,722,498.38	39° 11' 26.993 N	80° 42' 37.089 W
7,176.0	47.72	5.00	6,916.0	470.4	1,148.9	14,231,562.23	1,722,499.47	39° 11' 27.108 N	80° 42' 37.075 W
Middlesex									
7,190.0	49.07	4.44	6,925.3	480.8	1,149.8	14,231,572.66	1,722,500.33	39° 11' 27.211 N	80° 42' 37.063 W
7,221.0	52.76	2.33	6,944.8	504.9	1,151.2	14,231,596.67	1,722,501.74	39° 11' 27.449 N	80° 42' 37.044 W
7,251.0	56.01	359.43	6,962.3	529.2	1,151.5	14,231,621.05	1,722,502.10	39° 11' 27.690 N	80° 42' 37.039 W
7,282.0	59.05	356.03	6,978.9	555.4	1,150.5	14,231,647.18	1,722,501.05	39° 11' 27.948 N	80° 42' 37.051 W
7,313.0	61.91	352.84	6,994.2	582.2	1,147.9	14,231,674.02	1,722,498.43	39° 11' 28.214 N	80° 42' 37.083 W
7,343.0	65.16	350.73	7,007.6	608.8	1,144.0	14,231,700.59	1,722,494.58	39° 11' 28.477 N	80° 42' 37.131 W
7,344.0	65.24	350.66	7,008.0	609.7	1,143.9	14,231,701.48	1,722,494.43	39° 11' 28.485 N	80° 42' 37.133 W
Burkett									
7,373.0	67.53	348.71	7,019.6	635.8	1,139.1	14,231,727.62	1,722,489.67	39° 11' 28.744 N	80° 42' 37.192 W
7,396.0	69.48	347.82	7,028.0	656.8	1,134.8	14,231,748.57	1,722,485.32	39° 11' 28.951 N	80° 42' 37.247 W
Tully									
7,403.0	70.08	347.56	7,030.4	663.2	1,133.4	14,231,754.99	1,722,483.92	39° 11' 29.015 N	80° 42' 37.264 W
7,434.0	73.51	347.04	7,040.1	691.9	1,126.9	14,231,783.72	1,722,477.45	39° 11' 29.299 N	80° 42' 37.346 W
7,464.0	77.03	345.98	7,047.8	720.1	1,120.1	14,231,811.92	1,722,470.68	39° 11' 29.578 N	80° 42' 37.430 W
7,495.0	77.91	344.05	7,054.5	749.3	1,112.3	14,231,841.15	1,722,462.85	39° 11' 29.867 N	80° 42' 37.529 W
7,526.0	79.49	339.74	7,060.6	778.2	1,102.9	14,231,870.04	1,722,453.41	39° 11' 30.153 N	80° 42' 37.647 W
7,556.0	83.71	337.72	7,064.9	805.9	1,092.1	14,231,897.69	1,722,442.64	39° 11' 30.427 N	80° 42' 37.783 W
7,580.0	87.23	337.72	7,066.8	828.0	1,083.0	14,231,919.82	1,722,433.57	39° 11' 30.646 N	80° 42' 37.897 W
7,648.0	87.42	340.51	7,070.0	891.5	1,058.8	14,231,983.28	1,722,409.36	39° 11' 31.274 N	80° 42' 38.203 W
Marcellus									
7,672.0	87.49	341.50	7,071.1	914.1	1,051.0	14,232,005.95	1,722,401.56	39° 11' 31.499 N	80° 42' 38.301 W
7,763.0	93.65	343.78	7,070.2	1,000.9	1,023.9	14,232,092.75	1,722,374.42	39° 11' 32.358 N	80° 42' 38.642 W
7,854.0	92.42	343.87	7,065.3	1,088.2	998.6	14,232,180.03	1,722,349.11	39° 11' 33.222 N	80° 42' 38.960 W
7,946.0	89.52	344.05	7,063.8	1,176.6	973.1	14,232,268.42	1,722,323.69	39° 11' 34.097 N	80° 42' 39.279 W
8,037.0	90.22	341.85	7,064.0	1,263.6	946.5	14,232,355.42	1,722,297.01	39° 11' 34.958 N	80° 42' 39.615 W
8,129.0	89.96	341.41	7,063.9	1,350.9	917.5	14,232,442.73	1,722,268.02	39° 11' 35.822 N	80° 42' 39.980 W
8,220.0	88.55	341.06	7,065.0	1,437.1	888.2	14,232,528.88	1,722,238.75	39° 11' 36.675 N	80° 42' 40.348 W
8,315.0	88.55	340.80	7,067.4	1,526.8	857.2	14,232,618.64	1,722,207.72	39° 11' 37.563 N	80° 42' 40.739 W
8,410.0	89.60	342.46	7,069.0	1,617.0	827.2	14,232,708.78	1,722,177.79	39° 11' 38.455 N	80° 42' 41.116 W

JUN 08 2015



Survey Report - Geographic



Company: Antero Resources
Project: Doddridge County WV
Site: Richard Garry Pad /Johnson/Right Hand/Grimsdale
Well: Grimsdale Unit 2H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Grimsdale Unit 2H
TVD Reference: Grimsdale Unit 2H 1158' GL + 22.5' RKB @ 1180.5usft
MD Reference: Grimsdale Unit 2H 1158' GL + 22.5' RKB @ 1180.5usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Oklahoma District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
8,505.0	89.25	341.85	7,069.9	1,707.4	798.1	14,232,799.21	1,722,148.68	39° 11' 39.350 N	80° 42' 41.482 W
8,599.0	91.72	343.94	7,069.1	1,797.2	770.5	14,232,889.03	1,722,121.03	39° 11' 40.239 N	80° 42' 41.829 W
8,694.0	90.75	342.99	7,067.1	1,888.3	743.5	14,232,980.08	1,722,094.00	39° 11' 41.140 N	80° 42' 42.169 W
8,789.0	87.85	340.88	7,068.2	1,978.6	714.0	14,233,070.38	1,722,064.55	39° 11' 42.034 N	80° 42' 42.540 W
8,884.0	87.41	340.62	7,072.2	2,068.2	682.7	14,233,159.99	1,722,033.26	39° 11' 42.921 N	80° 42' 42.934 W
8,979.0	90.48	341.85	7,073.9	2,158.1	652.2	14,233,249.91	1,722,002.71	39° 11' 43.811 N	80° 42' 43.318 W
9,074.0	90.67	341.87	7,073.0	2,248.4	622.6	14,233,340.19	1,721,973.13	39° 11' 44.705 N	80° 42' 43.690 W
9,169.0	89.69	344.13	7,072.7	2,339.2	594.8	14,233,431.03	1,721,945.36	39° 11' 45.604 N	80° 42' 44.040 W
9,264.0	90.17	343.42	7,072.8	2,430.4	568.3	14,233,522.24	1,721,918.81	39° 11' 46.507 N	80° 42' 44.373 W
9,358.0	90.31	343.17	7,072.4	2,520.5	541.2	14,233,612.27	1,721,891.79	39° 11' 47.398 N	80° 42' 44.713 W
9,453.0	88.81	343.17	7,073.1	2,611.4	513.7	14,233,703.20	1,721,864.29	39° 11' 48.298 N	80° 42' 45.059 W
9,548.0	90.57	345.54	7,073.6	2,702.9	488.1	14,233,794.67	1,721,838.67	39° 11' 49.203 N	80° 42' 45.381 W
9,643.0	90.84	345.28	7,072.5	2,794.8	464.2	14,233,886.60	1,721,814.75	39° 11' 50.113 N	80° 42' 45.681 W
9,738.0	89.60	342.11	7,072.1	2,885.9	437.5	14,233,977.76	1,721,788.08	39° 11' 51.015 N	80° 42' 46.016 W
9,833.0	90.48	342.99	7,072.0	2,976.6	409.0	14,234,068.39	1,721,759.59	39° 11' 51.912 N	80° 42' 46.374 W
9,928.0	89.43	342.83	7,072.1	3,067.4	381.1	14,234,159.19	1,721,731.67	39° 11' 52.811 N	80° 42' 46.726 W
10,023.0	89.69	342.55	7,072.8	3,158.1	352.9	14,234,249.89	1,721,703.41	39° 11' 53.708 N	80° 42' 47.081 W
10,117.0	90.84	343.87	7,072.4	3,248.1	325.7	14,234,339.88	1,721,676.26	39° 11' 54.599 N	80° 42' 47.422 W
10,212.0	89.78	343.52	7,071.9	3,339.2	299.0	14,234,431.05	1,721,649.59	39° 11' 55.501 N	80° 42' 47.758 W
10,308.0	90.75	344.40	7,071.4	3,431.5	272.5	14,234,523.31	1,721,623.06	39° 11' 56.414 N	80° 42' 48.091 W
10,403.0	90.04	339.83	7,070.8	3,521.9	243.3	14,234,613.70	1,721,593.89	39° 11' 57.309 N	80° 42' 48.458 W
10,498.0	90.84	340.80	7,070.1	3,611.3	211.3	14,234,703.14	1,721,561.89	39° 11' 58.194 N	80° 42' 48.861 W
10,593.0	90.92	339.65	7,068.6	3,700.7	179.2	14,234,792.52	1,721,529.76	39° 11' 59.079 N	80° 42' 49.266 W
10,687.0	91.36	339.21	7,066.7	3,788.7	146.2	14,234,880.51	1,721,496.74	39° 11' 59.950 N	80° 42' 49.682 W
10,782.0	88.55	342.38	7,066.8	3,878.4	114.9	14,234,970.21	1,721,465.49	39° 12' 0.838 N	80° 42' 50.075 W
10,877.0	88.81	342.03	7,069.0	3,968.8	85.9	14,235,060.64	1,721,436.47	39° 12' 1.733 N	80° 42' 50.441 W
10,972.0	90.66	343.61	7,069.4	4,059.6	57.9	14,235,151.39	1,721,408.41	39° 12' 2.631 N	80° 42' 50.793 W
11,067.0	91.01	343.41	7,068.1	4,150.7	30.9	14,235,242.47	1,721,381.45	39° 12' 3.533 N	80° 42' 51.132 W
11,162.0	91.28	342.55	7,066.2	4,241.5	3.1	14,235,333.29	1,721,353.65	39° 12' 4.432 N	80° 42' 51.482 W
11,257.0	89.87	343.43	7,065.2	4,332.3	-24.7	14,235,424.13	1,721,325.86	39° 12' 5.331 N	80° 42' 51.832 W
11,352.0	89.87	342.55	7,065.4	4,423.2	-52.5	14,235,514.97	1,721,298.07	39° 12' 6.230 N	80° 42' 52.181 W
11,447.0	90.22	342.82	7,065.3	4,513.8	-80.8	14,235,605.67	1,721,269.79	39° 12' 7.127 N	80° 42' 52.537 W
11,542.0	89.69	343.87	7,065.4	4,604.9	-108.0	14,235,696.68	1,721,242.57	39° 12' 8.028 N	80° 42' 52.879 W
11,637.0	90.13	343.61	7,065.6	4,696.1	-134.6	14,235,787.88	1,721,215.97	39° 12' 8.931 N	80° 42' 53.214 W
11,732.0	90.84	343.26	7,064.8	4,787.1	-161.7	14,235,878.93	1,721,188.88	39° 12' 9.832 N	80° 42' 53.554 W
11,827.0	91.45	342.90	7,062.9	4,878.0	-189.3	14,235,969.80	1,721,161.24	39° 12' 10.731 N	80° 42' 53.902 W
11,922.0	89.34	343.61	7,062.2	4,968.9	-216.7	14,236,060.77	1,721,133.87	39° 12' 11.631 N	80° 42' 54.246 W
12,017.0	90.48	343.17	7,062.4	5,060.0	-243.8	14,236,151.80	1,721,106.72	39° 12' 12.532 N	80° 42' 54.587 W
12,117.0	91.24	342.95	7,060.9	5,155.6	-273.0	14,236,247.45	1,721,077.58	39° 12' 13.479 N	80° 42' 54.954 W
12,207.0	89.60	343.61	7,060.2	5,241.8	-298.9	14,236,333.64	1,721,051.69	39° 12' 14.332 N	80° 42' 55.279 W
12,302.0	89.43	342.03	7,061.0	5,332.6	-326.9	14,236,424.39	1,721,023.63	39° 12' 15.230 N	80° 42' 55.632 W
12,397.0	90.22	341.85	7,061.3	5,422.9	-356.4	14,236,514.71	1,720,994.18	39° 12' 16.124 N	80° 42' 55.903 W
12,492.0	89.16	344.66	7,061.8	5,513.9	-383.7	14,236,605.67	1,720,966.82	39° 12' 17.025 N	80° 42' 56.347 W
12,586.0	91.10	345.98	7,061.6	5,604.8	-407.6	14,236,696.60	1,720,943.00	39° 12' 17.924 N	80° 42' 56.646 W
12,681.0	92.59	346.24	7,058.5	5,697.0	-430.3	14,236,788.77	1,720,920.20	39° 12' 18.836 N	80° 42' 56.932 W
12,776.0	91.45	343.08	7,055.2	5,788.5	-455.5	14,236,880.31	1,720,895.09	39° 12' 19.742 N	80° 42' 57.248 W
12,871.0	92.15	342.55	7,052.2	5,879.2	-483.5	14,236,971.03	1,720,867.03	39° 12' 20.640 N	80° 42' 57.601 W
12,966.0	90.34	341.35	7,050.1	5,969.5	-512.9	14,237,061.32	1,720,837.61	39° 12' 21.534 N	80° 42' 57.971 W
13,061.0	90.13	339.83	7,049.7	6,059.1	-544.5	14,237,150.92	1,720,806.04	39° 12' 22.421 N	80° 42' 58.369 W
13,155.0	90.31	340.09	7,049.4	6,147.4	-576.7	14,237,239.23	1,720,773.83	39° 12' 23.295 N	80° 42' 58.774 W
13,250.0	91.80	342.64	7,047.6	6,237.4	-607.1	14,237,329.22	1,720,743.48	39° 12' 24.186 N	80° 42' 59.156 W
13,345.0	91.63	341.94	7,044.8	6,327.9	-636.0	14,237,419.68	1,720,714.59	39° 12' 25.081 N	80° 42' 59.520 W
13,422.0	91.01	341.50	7,043.0	6,401.0	-660.1	14,237,492.77	1,720,690.45	39° 12' 25.805 N	80° 42' 59.824 W



Survey Report - Geographic



Company:	Antero Resources	Local Co-ordinate Reference:	Well Grimsdale Unit 2H
Project:	Doddridge County WV	TVD Reference:	Grimsdale Unit 2H 1158' GL + 22.5' RKB @ 1180.5usft
Site:	Richard Garry Pad /Johnson/Right Hand/Grimsdale	MD Reference:	Grimsdale Unit 2H 1158' GL + 22.5' RKB @ 1180.5usft
Well:	Grimsdale Unit 2H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
13,475.0	91.00	341.50	7,042.1	6,451.2	-676.9	14,237,543.03	1,720,673.63	39° 12' 26.302 N	80° 43' 0.036 W

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
7,176.0	6,916.0	470.4	1,148.9	Middlesex	
7,344.0	7,008.0	609.7	1,143.9	Burkett	
7,396.0	7,028.0	656.8	1,134.8	Tully	
7,648.0	7,070.0	891.5	1,058.8	Marcellus	

Checked By: _____ Approved By: _____ Date: _____

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