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JUL 20 2015

MORGANTOWN, WV



James Unit 1H
Doddridge County WV
Northing: 14248462.09
Easting: 1679277.19
As Drilled



Genie Lightfoot
14.09, February 25 2015
Scientific Drilling
11220 NW 10th Street
Yukon OK 73099

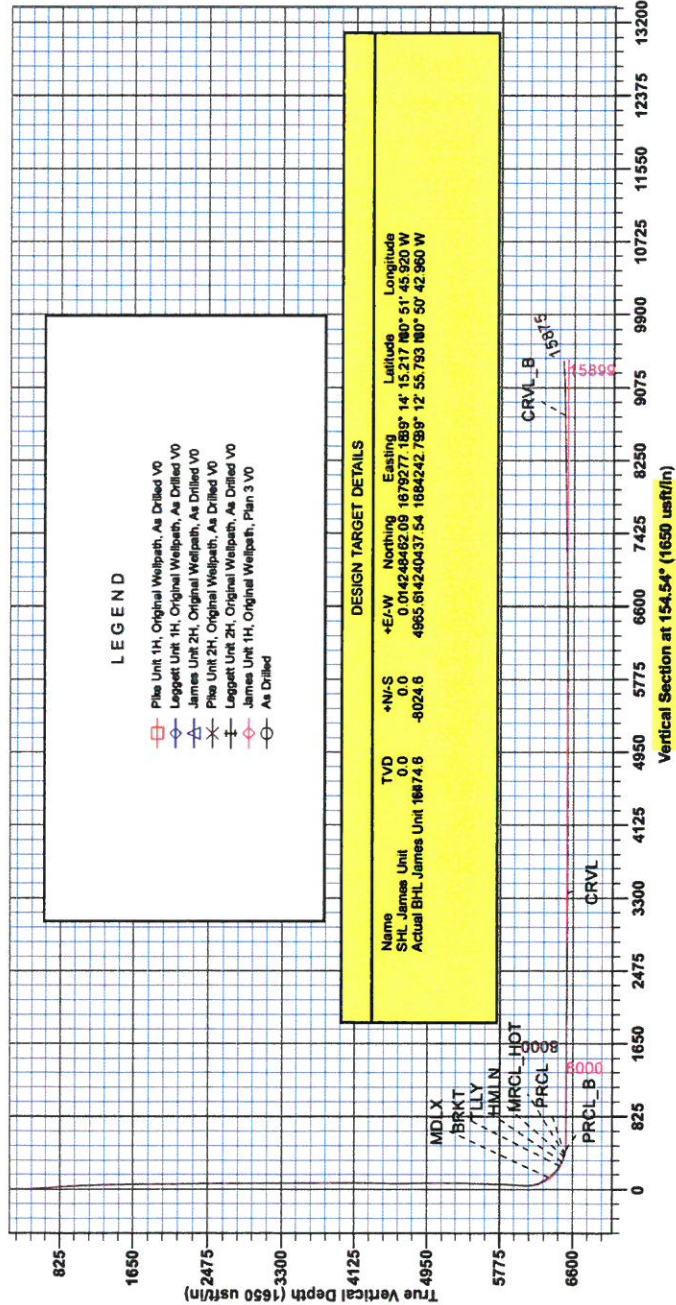
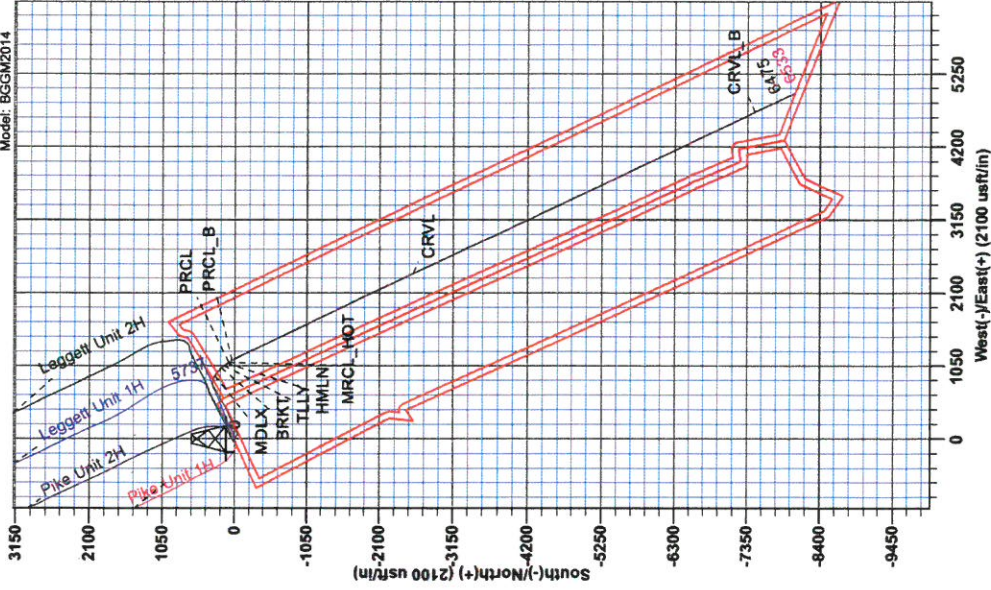
WELL DETAILS James Unit 1H			
Ground Level:	990.0	Latitude	Longitude
+N/S	+E/W	Northing	Easting
0.0	0.0	14248462.09	1679277.19

PROJECT DETAILS-Doddridge County WV		SITE DETAILS:	
Geodetic System: Universal Transverse Mercator (US Survey Feet)		Robert Williams Pad: Leggett/ Pike Pad/James/McGee	
Datum: NAD 1927 (NADCON CONUS)		Site Centre Northing: 14248467.61	
Ellipsoid: Clarke 1866		Easting: 1679248.10	
Zone: Zone 17N (84 W to 78 W)		Positional Uncertainty: 0.0	
System Datum: Mean Sea Level		Convergence: 0.09	
		Local North: Grid	

Precision 523: G.L. 990' + KB.19' @ 1000.0usft
Gr: 990.0

Azimuths to Grid North
True North: -0.09°
Magnetic North: -8.50°
Magnetic Field
Strength: 52194.3anT
Dip Angle: 66.81°
Date: 11/3/2014
Model: BCGM2014

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



LEGEND

- Pike Unit 1H, Original Wellpath, As Drilled VO
- Leggett Unit 1H, Original Wellpath, As Drilled VO
- △— James Unit 2H, Original Wellpath, As Drilled VO
- ×— Pike Unit 2H, Original Wellpath, As Drilled VO
- +— Leggett Unit 2H, Original Wellpath, As Drilled VO
- ◇— James Unit 1H, Original Wellpath, Plan 3 VO
- As Drilled

DESIGN TARGET DETAILS

Name	TVD	+N/S	Northing	Easting	Latitude	Longitude
SHL James Unit	0.0	0.0	0 014248462.09	1679277.19	1858° 14'	51° 43' 920 W
Actual BHL James Unit	16874.8	-8024.8	4865 814240437.54	1684242.758	12° 55.793 180° 50'	42 960 W

Vertical Section at 154.54° (1650 usft/in)



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MORGANTOWN, WV

Antero

Doddridge County WV

Robert Williams Pad: Leggett/ Pike Pad/James/McGee

James Unit 1H

Original Wellpath

Design: As Drilled

EOW Completion Report

25 February, 2015



JUL 20 2015



WV GEOLOGICAL SURVEY
MORGANTOWN, WV

EOW Completion Report



Company:	Antero	Local Co-ordinate Reference:	Well James Unit 1H
Project:	Doddridge County WV	TVD Reference:	Precision 523: GL 990' + KB 19' @ 1009.0usft
Site:	Robert Williams Pad: Leggett/ Pike Pad/James/M	MD Reference:	Precision 523: GL 990' + KB 19' @ 1009.0usft
Well:	James 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	Robert Williams Pad: Leggett/ Pike Pad/James/McGee				
Site Position:		Northing:	14,248,467.61 usft	Latitude:	39° 14' 15.272 N
From:	Map	Easting:	1,679,248.10usft	Longitude:	80° 51' 46.289 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.09 °

Well	James Unit 1H, Marcellus					
Well Position	+N/-S	0.0 usft	Northing:	14,248,462.09 usft	Latitude:	39° 14' 15.217 N
	+E/-W	0.0 usft	Easting:	1,679,277.19 usft	Longitude:	80° 51' 45.920 W
Position Uncertainty	2.0 usft		Wellhead Elevation:	1,009.0 usft	Ground Level:	990.0 usft

Wellbore	Original Wellpath				
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	11/3/2014	-8.42	66.81	52,194

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	154.54	

Survey Program	Date 2/25/2015				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
106.0	3,956.0	Survey #6 Gyro to Tangent (Original Wellp	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4	
3,980.9	6,006.4	Survey #7 Final Gyro (Original Wellpath)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4	
6,037.0	15,875.0	Survey #8 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
106.0	0.07	69.54	106.0	0.0	0.1	0.0	0.07
131.0	0.12	70.47	131.0	0.0	0.1	0.0	0.20
156.0	0.13	53.42	156.0	0.1	0.1	0.0	0.15
181.0	0.06	43.27	181.0	0.1	0.2	0.0	0.29
206.0	0.07	238.28	206.0	0.1	0.2	0.0	0.52
231.0	0.20	338.15	231.0	0.1	0.1	0.0	0.89
256.0	0.16	74.83	256.0	0.2	0.2	-0.1	1.08
281.0	0.15	57.29	281.0	0.2	0.2	-0.1	0.19
306.0	0.13	11.82	306.0	0.2	0.3	-0.1	0.44

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Project:	Doddridge County WV	TVD Reference:	Precision 523: GL 990' + KB 19' @ 1009.0usft
Site:	Robert Williams Pad: Leggett/ Pike Pad/James/M	MD Reference:	Precision 523: GL 990' + KB 19' @ 1009.0usft
Well:	James 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)
331.0	0.16	43.06	331.0	0.3	0.3	-0.1	0.33
356.0	0.22	46.17	356.0	0.4	0.3	-0.2	0.24
381.0	0.20	82.77	381.0	0.4	0.4	-0.2	0.53
406.0	0.43	98.53	406.0	0.4	0.6	-0.1	0.97
431.0	0.59	106.35	431.0	0.3	0.8	0.0	0.70
456.0	2.25	115.28	456.0	0.1	1.3	0.5	6.68
481.0	3.20	116.18	481.0	-0.4	2.4	1.4	3.80
506.0	4.07	117.99	505.9	-1.2	3.8	2.7	3.51
531.0	4.69	118.61	530.8	-2.1	5.5	4.2	2.49
556.0	4.73	118.88	555.8	-3.0	7.3	5.9	0.18
581.0	4.79	118.71	580.7	-4.0	9.1	7.6	0.25
606.0	4.90	118.77	605.6	-5.1	11.0	9.3	0.44
631.0	4.89	119.20	630.5	-6.1	12.8	11.0	0.15
656.0	4.90	118.83	655.4	-7.1	14.7	12.8	0.13
681.0	4.95	118.90	680.3	-8.2	16.6	14.5	0.20
706.0	5.01	118.77	705.2	-9.2	18.5	16.3	0.24
731.0	4.93	119.17	730.1	-10.3	20.4	18.0	0.35
756.0	5.01	118.60	755.0	-11.3	22.3	19.8	0.38
781.0	5.05	118.66	779.9	-12.4	24.2	21.6	0.16
806.0	4.99	118.95	804.8	-13.4	26.1	23.3	0.26
831.0	5.09	118.86	829.7	-14.5	28.0	25.1	0.40
856.0	4.80	120.00	854.6	-15.5	29.9	26.9	1.22
881.0	4.36	121.34	879.6	-16.5	31.6	28.5	1.81
906.0	4.03	120.84	904.5	-17.5	33.2	30.1	1.33
931.0	3.84	120.98	929.4	-18.4	34.7	31.5	0.76
956.0	3.69	120.27	954.4	-19.2	36.1	32.9	0.63
981.0	3.56	120.87	979.3	-20.0	37.4	34.2	0.54
1,006.0	3.53	120.56	1,004.3	-20.8	38.8	35.4	0.14
1,031.0	3.35	120.90	1,029.2	-21.6	40.1	36.7	0.72
1,056.0	3.15	120.32	1,054.2	-22.3	41.3	37.9	0.81
1,081.0	2.98	121.59	1,079.2	-23.0	42.4	39.0	0.73
1,106.0	2.93	119.81	1,104.1	-23.6	43.5	40.1	0.42
1,131.0	2.76	119.98	1,129.1	-24.3	44.6	41.1	0.68
1,156.0	2.61	120.10	1,154.1	-24.8	45.6	42.0	0.60
1,181.0	2.39	121.19	1,179.0	-25.4	46.6	42.9	0.90
1,206.0	2.18	120.79	1,204.0	-25.9	47.4	43.8	0.84
1,231.0	2.11	121.12	1,229.0	-26.4	48.2	44.6	0.28
1,256.0	2.11	121.72	1,254.0	-26.9	49.0	45.3	0.09
1,281.0	1.97	121.40	1,279.0	-27.3	49.8	46.1	0.56
1,306.0	1.91	120.80	1,304.0	-27.8	50.5	46.8	0.25
1,331.0	1.78	121.25	1,328.9	-28.2	51.2	47.5	0.52
1,356.0	1.69	120.89	1,353.9	-28.6	51.8	48.1	0.36
1,381.0	1.52	121.59	1,378.9	-28.9	52.4	48.7	0.68
1,406.0	1.33	122.67	1,403.9	-29.3	53.0	49.2	0.77
1,431.0	1.23	121.15	1,428.9	-29.6	53.4	49.7	0.42

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EOW Completion Report



Company: Antero	Local Co-ordinate Reference: Well James Unit 1H
Project: Doddridge County WV	TVD Reference: Precision 523: GL 990' + KB 19' @ 1009.0usft
Site: Robert Williams Pad: Leggett/ Pike Pad/James/M	MD Reference: Precision 523: GL 990' + KB 19' @ 1009.0usft
Well: James Unit 1H	North Reference: Grid
Wellbore: Original Wellpath	Survey Calculation Method: Minimum Curvature
Design: As Drilled	Database: Oklahoma District

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
1,456.0	1.25	122.37	1,453.9	-29.9	53.9	50.1	0.13
1,481.0	1.14	122.92	1,478.9	-30.1	54.3	50.6	0.44
1,506.0	1.05	125.10	1,503.9	-30.4	54.7	51.0	0.40
1,531.0	0.96	129.35	1,528.9	-30.7	55.1	51.4	0.47
1,556.0	0.98	127.59	1,553.9	-30.9	55.4	51.7	0.14
1,581.0	0.85	127.69	1,578.9	-31.2	55.7	52.1	0.52
1,606.0	0.78	132.18	1,603.9	-31.4	56.0	52.4	0.38
1,631.0	0.74	135.96	1,628.9	-31.6	56.2	52.7	0.26
1,656.0	0.76	134.36	1,653.9	-31.9	56.5	53.0	0.12
1,681.0	0.64	140.82	1,678.9	-32.1	56.7	53.3	0.57
1,706.0	0.60	138.25	1,703.9	-32.3	56.8	53.6	0.19
1,731.0	0.64	139.75	1,728.9	-32.5	57.0	53.9	0.17
1,756.0	0.71	136.90	1,753.9	-32.7	57.2	54.1	0.31
1,781.0	0.60	146.76	1,778.9	-32.9	57.4	54.4	0.63
1,806.0	0.61	148.39	1,803.9	-33.2	57.5	54.7	0.08
1,831.0	0.58	157.41	1,828.9	-33.4	57.7	54.9	0.39
1,856.0	0.69	146.39	1,853.9	-33.6	57.8	55.2	0.66
1,881.0	0.59	156.13	1,878.9	-33.9	57.9	55.5	0.59
1,906.0	0.68	150.66	1,903.9	-34.1	58.0	55.8	0.43
1,931.0	0.65	153.65	1,928.9	-34.4	58.2	56.1	0.18
1,956.0	0.64	151.86	1,953.9	-34.6	58.3	56.3	0.09
1,981.0	0.70	152.64	1,978.9	-34.9	58.4	56.6	0.24
2,006.0	0.67	154.34	2,003.9	-35.2	58.6	56.9	0.14
2,031.0	0.70	157.59	2,028.9	-35.4	58.7	57.2	0.20
2,056.0	0.65	160.86	2,053.9	-35.7	58.8	57.5	0.25
2,081.0	0.69	159.71	2,078.9	-36.0	58.9	57.8	0.17
2,106.0	0.58	162.62	2,103.8	-36.2	59.0	58.1	0.46
2,131.0	0.72	157.25	2,128.8	-36.5	59.1	58.4	0.61
2,156.0	0.80	164.59	2,153.8	-36.8	59.2	58.7	0.50
2,181.0	0.70	168.00	2,178.8	-37.1	59.3	59.0	0.44
2,206.0	0.64	161.57	2,203.8	-37.4	59.4	59.3	0.38
2,231.0	0.70	164.74	2,228.8	-37.7	59.4	59.6	0.28
2,256.0	0.68	159.70	2,253.8	-38.0	59.5	59.9	0.26
2,281.0	0.71	165.81	2,278.8	-38.3	59.6	60.2	0.32
2,306.0	0.74	168.24	2,303.8	-38.6	59.7	60.5	0.17
2,331.0	0.66	168.41	2,328.8	-38.9	59.8	60.8	0.32
2,356.0	0.69	163.21	2,353.8	-39.2	59.8	61.1	0.27
2,381.0	0.86	165.62	2,378.8	-39.5	59.9	61.4	0.69
2,406.0	0.64	166.93	2,403.8	-39.8	60.0	61.7	0.88
2,431.0	0.58	186.77	2,428.8	-40.1	60.0	62.0	0.87
2,456.0	0.81	161.66	2,453.8	-40.4	60.1	62.3	1.51
2,481.0	0.79	158.19	2,478.8	-40.7	60.2	62.6	0.21
2,506.0	0.75	167.88	2,503.8	-41.0	60.3	62.9	0.54
2,531.0	0.57	170.96	2,528.8	-41.3	60.3	63.2	0.73

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EOW Completion Report



Company:	Antero	Local Co-ordinate Reference:	Well James Unit 1H
Project:	Doddridge County WV	TVD Reference:	Precision 523: GL 990' + KB 19' @ 1009.0usft
Site:	Robert Williams Pad: Leggett/ Pike Pad/James/M	MD Reference:	Precision 523: GL 990' + KB 19' @ 1009.0usft
Well:	James 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)
2,556.0	0.54	179.18	2,553.8	-41.5	60.3	63.4	0.34
2,581.0	0.41	159.77	2,578.8	-41.7	60.4	63.6	0.82
2,606.0	0.55	174.83	2,603.8	-41.9	60.4	63.8	0.75
2,631.0	0.35	153.38	2,628.8	-42.1	60.5	64.0	1.03
2,656.0	0.53	173.38	2,653.8	-42.3	60.5	64.2	0.94
2,681.0	0.47	180.11	2,678.8	-42.5	60.5	64.4	0.34
2,706.0	0.42	175.01	2,703.8	-42.7	60.5	64.6	0.25
2,731.0	0.42	181.80	2,728.8	-42.9	60.5	64.8	0.20
2,756.0	0.45	185.20	2,753.8	-43.1	60.5	64.9	0.16
2,781.0	0.34	181.21	2,778.8	-43.3	60.5	65.1	0.45
2,806.0	0.46	186.24	2,803.8	-43.4	60.5	65.2	0.50
2,831.0	0.38	192.41	2,828.8	-43.6	60.5	65.4	0.37
2,856.0	0.37	189.55	2,853.8	-43.8	60.4	65.5	0.08
2,881.0	0.37	192.71	2,878.8	-43.9	60.4	65.6	0.08
2,906.0	0.34	198.64	2,903.8	-44.1	60.4	65.8	0.19
2,931.0	0.45	196.87	2,928.8	-44.3	60.3	65.9	0.44
2,956.0	0.39	190.35	2,953.8	-44.4	60.3	66.0	0.31
2,981.0	0.47	197.76	2,978.8	-44.6	60.2	66.2	0.39
3,006.0	0.38	194.90	3,003.8	-44.8	60.2	66.3	0.37
3,031.0	0.42	199.72	3,028.8	-45.0	60.1	66.4	0.21
3,056.0	0.38	204.56	3,053.8	-45.1	60.1	66.6	0.21
3,081.0	0.40	197.53	3,078.8	-45.3	60.0	66.7	0.21
3,106.0	0.43	199.38	3,103.8	-45.4	59.9	66.8	0.13
3,131.0	0.35	190.67	3,128.8	-45.6	59.9	66.9	0.40
3,156.0	0.34	193.43	3,153.8	-45.8	59.9	67.1	0.08
3,181.0	0.44	193.57	3,178.8	-45.9	59.8	67.2	0.40
3,206.0	0.32	192.71	3,203.8	-46.1	59.8	67.3	0.48
3,231.0	0.30	200.29	3,228.8	-46.2	59.7	67.4	0.18
3,256.0	0.30	203.85	3,253.8	-46.3	59.7	67.5	0.07
3,281.0	0.31	206.77	3,278.8	-46.5	59.6	67.6	0.07
3,306.0	0.32	202.50	3,303.8	-46.6	59.6	67.7	0.10
3,331.0	0.46	207.13	3,328.8	-46.7	59.5	67.8	0.57
3,356.0	0.39	202.41	3,353.8	-46.9	59.4	67.9	0.31
3,381.0	0.35	200.78	3,378.8	-47.1	59.4	68.0	0.17
3,406.0	0.35	206.92	3,403.8	-47.2	59.3	68.1	0.15
3,431.0	0.43	196.15	3,428.8	-47.4	59.3	68.2	0.43
3,456.0	0.35	197.36	3,453.8	-47.5	59.2	68.4	0.32
3,481.0	0.48	217.56	3,478.8	-47.7	59.1	68.5	0.78
3,506.0	0.37	224.55	3,503.8	-47.8	59.0	68.5	0.49
3,531.0	0.37	209.40	3,528.8	-47.9	58.9	68.6	0.39
3,556.0	0.44	215.65	3,553.8	-48.1	58.8	68.7	0.33
3,581.0	0.31	198.33	3,578.8	-48.2	58.7	68.8	0.68
3,606.0	0.33	206.12	3,603.8	-48.4	58.7	68.9	0.19
3,631.0	0.26	239.31	3,628.8	-48.5	58.6	68.9	0.73

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WV GEOLOGICAL SURVEY
MORGANTOWN, WV

EOW Completion Report



Company:	Antero	Local Co-ordinate Reference:	Well James Unit 1H
Project:	Doddridge County WV	TVD Reference:	Precision 523: GL 990' + KB 19' @ 1009.0usft
Site:	Robert Williams Pad: Leggett/ Pike Pad/James/M	MD Reference:	Precision 523: GL 990' + KB 19' @ 1009.0usft
Well:	James 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)		
3,656.0	0.36	242.46	3,653.8	-48.5	58.5	68.9	0.41		
3,681.0	0.20	210.36	3,678.8	-48.6	58.4	69.0	0.87		
3,706.0	0.31	233.22	3,703.8	-48.7	58.3	69.0	0.59		
3,731.0	0.34	236.85	3,728.8	-48.8	58.2	69.0	0.15		
3,756.0	0.29	224.84	3,753.8	-48.8	58.1	69.1	0.33		
3,781.0	0.38	214.38	3,778.8	-49.0	58.0	69.1	0.43		
3,806.0	0.27	216.50	3,803.8	-49.1	57.9	69.2	0.44		
3,831.0	0.20	192.68	3,828.8	-49.2	57.9	69.3	0.47		
3,856.0	0.25	218.99	3,853.8	-49.2	57.8	69.3	0.45		
3,881.0	0.24	239.17	3,878.8	-49.3	57.7	69.3	0.35		
3,906.0	0.18	215.36	3,903.8	-49.4	57.7	69.4	0.42		
3,931.0	0.28	219.67	3,928.8	-49.4	57.6	69.4	0.41		
3,956.0	0.44	208.38	3,953.8	-49.6	57.5	69.5	0.70		
3,980.9	0.11	218.74	3,978.6	-49.7	57.5	69.6	1.34		
4,005.5	0.13	70.18	4,003.3	-49.7	57.5	69.6	0.94		
4,030.0	0.78	82.00	4,027.8	-49.7	57.7	69.6	2.67		
4,055.7	1.62	79.10	4,053.5	-49.6	58.2	69.8	3.27		
4,080.7	2.32	77.63	4,078.4	-49.4	59.0	70.0	2.81		
4,104.8	2.90	76.49	4,102.6	-49.1	60.1	70.2	2.41		
4,130.4	3.71	74.57	4,128.1	-48.8	61.5	70.5	3.19		
4,154.9	4.49	71.21	4,152.5	-48.3	63.2	70.7	3.34		
4,180.9	5.35	67.15	4,178.5	-47.5	65.3	70.9	3.56		
4,205.2	6.05	62.87	4,202.6	-46.4	67.5	70.9	3.37		
4,230.6	6.84	60.49	4,227.9	-45.1	70.0	70.8	3.28		
4,255.5	7.57	60.10	4,252.6	-43.5	72.7	70.6	2.94		
4,279.8	8.25	60.70	4,276.6	-41.9	75.6	70.3	2.83		
4,305.5	8.82	61.10	4,302.0	-40.0	78.9	70.1	2.23		
4,330.7	9.53	61.63	4,326.9	-38.1	82.5	69.8	2.83		
4,355.3	10.35	61.44	4,351.2	-36.1	86.2	69.6	3.33		
4,380.2	11.27	60.75	4,375.6	-33.8	90.3	69.3	3.74		
4,405.4	11.78	60.44	4,400.3	-31.3	94.7	69.0	2.04		
4,430.0	12.28	60.35	4,424.4	-28.8	99.1	68.6	2.03		
4,455.7	13.23	60.08	4,449.4	-26.0	104.1	68.2	3.71		
4,480.4	14.33	59.86	4,473.5	-23.0	109.2	67.7	4.45		
4,505.3	15.16	59.74	4,497.5	-19.9	114.6	67.2	3.34		
4,529.9	15.66	59.54	4,521.2	-16.6	120.3	66.6	2.04		
4,555.0	16.23	59.75	4,545.3	-13.1	126.2	66.1	2.28		
4,580.7	16.77	60.10	4,570.0	-9.4	132.5	65.5	2.14		
4,605.1	17.53	61.45	4,593.3	-5.9	138.8	65.0	3.52		
4,630.3	17.84	62.91	4,617.3	-2.3	145.6	64.7	2.15		
4,654.4	18.52	64.02	4,640.2	1.0	152.3	64.5	3.17		
4,680.5	18.72	65.14	4,664.9	4.6	159.8	64.6	1.57		
4,705.4	19.26	66.29	4,688.5	7.9	167.2	64.7	2.64		
4,729.4	19.72	66.62	4,711.1	11.1	174.6	65.0	1.97		



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 JUL 23 2015
 HYDROLOGICAL SURVEY
 JOHN, WV

EOW Completion Report



Company: Antero	Local Co-ordinate Reference: Well James Unit 1H
Project: Doddridge County WV	TVD Reference: Precision 523: GL 990' + KB 19' @ 1009.0usft
Site: Robert Williams Pad: Leggett/ Pike Pad/James/M	MD Reference: Precision 523: GL 990' + KB 19' @ 1009.0usft
Well: James 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)
4,755.5	20.25	67.06	4,735.7	14.6	182.8	65.3	2.11
4,780.3	20.91	67.61	4,758.9	18.0	190.8	65.8	2.77
4,805.9	21.85	67.75	4,782.7	21.6	199.4	66.3	3.68
4,829.9	22.60	67.91	4,804.9	25.0	207.8	66.8	3.14
4,855.3	23.69	67.89	4,828.3	28.7	217.1	67.4	4.29
4,880.7	24.26	67.86	4,851.5	32.6	226.7	68.0	2.25
4,905.6	24.86	67.71	4,874.2	36.5	236.3	68.6	2.42
4,930.3	25.30	67.59	4,896.5	40.5	245.9	69.1	1.79
4,955.7	25.66	67.20	4,919.4	44.7	256.0	69.7	1.57
4,980.8	26.10	66.68	4,942.0	49.0	266.1	70.1	1.97
5,006.0	26.34	66.37	4,964.6	53.4	276.3	70.5	1.10
5,030.7	26.52	66.20	4,986.7	57.8	286.3	70.9	0.79
5,055.3	26.84	65.95	5,008.7	62.3	296.5	71.2	1.38
5,080.3	26.59	65.46	5,031.1	67.0	306.7	71.4	1.33
5,105.4	25.86	64.67	5,053.6	71.6	316.8	71.5	3.23
5,130.4	25.80	64.24	5,076.0	76.3	326.6	71.5	0.79
5,155.0	25.88	63.81	5,098.2	81.0	336.2	71.4	0.83
5,179.5	25.70	63.23	5,120.3	85.8	345.8	71.2	1.26
5,205.7	25.65	62.72	5,143.9	90.9	355.9	70.9	0.86
5,230.7	25.83	62.69	5,166.4	95.9	365.5	70.5	0.72
5,255.0	26.27	62.81	5,188.2	100.8	375.0	70.2	1.82
5,280.8	26.69	63.05	5,211.3	106.0	385.3	69.9	1.68
5,305.2	26.75	63.11	5,233.1	111.0	395.0	69.6	0.27
5,330.0	26.18	62.72	5,255.3	116.0	404.9	69.3	2.40
5,355.7	26.21	62.61	5,278.4	121.3	415.0	68.9	0.22
5,380.1	26.11	62.67	5,300.2	126.2	424.5	68.6	0.43
5,405.9	26.55	62.63	5,323.4	131.5	434.7	68.2	1.70
5,430.2	26.94	62.76	5,345.1	136.5	444.4	67.8	1.63
5,455.2	27.01	62.91	5,367.4	141.6	454.5	67.5	0.39
5,480.4	26.45	62.63	5,389.9	146.8	464.6	67.1	2.28
5,505.6	26.14	62.51	5,412.5	152.0	474.5	66.8	1.25
5,530.4	25.84	62.24	5,434.8	157.0	484.1	66.3	1.30
5,555.4	25.93	62.44	5,457.3	162.1	493.8	65.9	0.50
5,580.6	26.31	62.53	5,479.9	167.2	503.6	65.5	1.51
5,605.2	26.30	62.85	5,501.9	172.2	513.3	65.2	0.58
5,630.1	26.00	62.33	5,524.3	177.3	523.0	64.8	1.51
5,655.3	25.32	61.38	5,547.0	182.4	532.7	64.3	3.15
5,680.6	25.00	60.68	5,569.9	187.6	542.1	63.6	1.73
5,704.4	25.03	60.16	5,591.5	192.6	550.8	62.9	0.93
5,731.0	25.49	60.51	5,615.5	198.2	560.7	62.1	1.82
5,755.1	25.94	60.42	5,637.3	203.4	569.8	61.3	1.87
5,780.7	25.85	60.51	5,660.2	208.9	579.5	60.5	0.38
5,804.9	25.56	60.06	5,682.0	214.1	588.6	59.8	1.44
5,830.0	25.51	59.87	5,704.7	219.5	598.0	58.9	0.38



Company:	Antero	Local Co-ordinate Reference:	Well James Unit 1H
Project:	Doddridge County WV	TVD Reference:	Precision 523: GL 990' + KB 19' @ 1009.0usft
Site:	Robert Williams Pad: Leggett/ Pike Pad/James/M	MD Reference:	Precision 523: GL 990' + KB 19' @ 1009.0usft
Well:	James 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)
5,855.6	25.63	60.31	5,727.9	225.0	607.6	58.0	0.88
5,879.5	26.12	60.76	5,749.3	230.1	616.6	57.3	2.21
5,905.4	26.60	61.47	5,772.5	235.7	626.7	56.6	2.22
5,930.7	27.02	61.88	5,795.1	241.1	636.8	56.1	1.81
5,955.1	27.13	61.38	5,816.9	246.4	646.6	55.5	1.03
5,980.3	26.57	60.34	5,839.3	251.9	656.5	54.8	2.90
6,006.4	26.46	59.69	5,862.7	257.7	666.6	53.8	1.19
6,037.0	26.56	58.21	5,890.1	264.8	678.3	52.5	2.18
6,067.0	26.67	57.63	5,916.9	271.9	689.7	51.0	0.94
6,097.0	26.28	57.05	5,943.7	279.1	700.9	49.3	1.56
6,126.0	25.71	57.26	5,969.8	286.0	711.6	47.7	1.99
6,156.0	25.71	55.75	5,996.8	293.2	722.4	45.8	2.18
6,186.0	26.39	54.69	6,023.8	300.7	733.3	43.7	2.75
6,216.0	25.94	56.46	6,050.7	308.2	744.2	41.6	3.00
6,246.0	25.86	62.95	6,077.7	314.8	755.5	40.5	9.45
6,276.0	27.13	72.86	6,104.6	319.8	767.8	41.3	15.31
6,305.0	28.36	81.13	6,130.2	322.8	781.0	44.3	13.93
6,335.0	29.53	87.28	6,156.5	324.3	795.4	49.2	10.66
6,365.0	30.69	93.00	6,182.5	324.2	810.4	55.7	10.31
6,395.0	32.12	100.66	6,208.1	322.3	825.9	64.0	14.12
6,425.0	33.70	106.72	6,233.3	318.5	841.7	74.3	12.17
6,455.0	35.43	110.90	6,258.0	313.0	857.8	86.2	9.78
6,484.0	37.27	114.39	6,281.3	306.3	873.7	99.0	9.54
6,514.0	39.53	117.61	6,304.8	298.2	890.4	113.6	10.06
6,544.0	42.05	120.66	6,327.6	288.6	907.5	129.6	10.71
6,551.0	42.58	121.33	6,332.7	286.2	911.6	133.5	9.94
MDLX							
6,574.0	44.34	123.45	6,349.4	277.7	924.9	146.9	9.94
6,604.0	46.51	125.97	6,370.5	265.5	942.5	165.4	9.39
6,634.0	49.00	128.18	6,390.6	252.1	960.2	185.1	9.93
6,664.0	51.75	130.79	6,409.8	237.4	978.0	206.1	11.35
6,694.0	54.56	133.14	6,427.8	221.4	995.9	228.2	11.27
6,724.0	56.81	135.62	6,444.7	204.1	1,013.6	251.5	10.14
6,739.0	58.04	136.67	6,452.8	194.9	1,022.3	263.5	10.11
BRKT							
6,753.0	59.20	137.62	6,460.0	186.2	1,030.4	274.9	10.11
6,783.0	62.35	140.39	6,474.7	166.4	1,047.6	300.1	13.23
6,795.0	63.75	141.40	6,480.1	158.1	1,054.4	310.5	13.86
TLLY							
6,813.0	65.86	142.87	6,487.8	145.3	1,064.4	326.4	13.86
6,843.0	69.42	145.36	6,499.2	122.8	1,080.6	353.7	14.13
6,857.0	70.88	146.66	6,504.0	111.9	1,088.0	366.7	13.56
HMLN							
6,873.0	72.55	148.11	6,509.0	99.1	1,096.2	381.8	13.56

JUL 20 2015



Company:	Antero	Local Co-ordinate Reference:	Well James Unit 1H
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Site:	Robert Williams Pad: Leggett/ Pike Pad/James/M	MD Reference:	Precision 523: GL 990' + KB 19' @ 1009.0usft
Well:	James 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)
6,877.0	73.06	148.40	6,510.2	95.8	1,098.2	385.6	14.54
MRCL_HOT							
6,885.0	74.09	148.96	6,512.4	89.3	1,102.2	393.2	14.54
PRCL							
6,903.0	76.41	150.22	6,517.0	74.2	1,111.0	410.5	14.54
6,932.0	80.56	151.70	6,522.8	49.4	1,124.7	438.9	15.16
6,943.0	82.24	151.98	6,524.4	39.8	1,129.9	449.8	15.47
PRCL_B							
6,969.0	86.21	152.62	6,527.1	16.9	1,141.9	475.6	15.47
7,005.0	90.13	151.89	6,528.2	-14.9	1,158.7	511.6	11.08
7,059.0	90.77	152.68	6,527.8	-62.7	1,183.8	565.5	1.88
7,148.0	90.03	155.52	6,527.2	-142.8	1,222.6	654.5	3.30
7,238.0	90.07	154.18	6,527.1	-224.2	1,260.9	744.5	1.49
7,327.0	89.97	155.23	6,527.1	-304.7	1,298.9	833.5	1.19
7,417.0	90.00	155.58	6,527.1	-386.5	1,336.4	923.5	0.39
7,507.0	90.27	155.08	6,526.9	-468.3	1,373.9	1,013.5	0.63
7,596.0	89.73	155.30	6,526.9	-549.1	1,411.3	1,102.5	0.66
7,686.0	89.53	154.44	6,527.4	-630.6	1,449.5	1,192.5	0.98
7,775.0	89.36	154.74	6,528.3	-711.0	1,487.7	1,281.5	0.39
7,865.0	90.23	154.44	6,528.6	-792.3	1,526.3	1,371.5	1.02
7,954.0	89.77	153.74	6,528.6	-872.3	1,565.2	1,460.4	0.94
8,044.0	89.80	154.97	6,529.0	-953.4	1,604.1	1,550.4	1.37
8,134.0	89.83	154.34	6,529.3	-1,034.8	1,642.7	1,640.4	0.70
8,223.0	89.83	153.71	6,529.5	-1,114.8	1,681.6	1,729.4	0.71
8,313.0	90.20	154.17	6,529.5	-1,195.6	1,721.2	1,819.4	0.66
8,402.0	89.29	155.09	6,529.9	-1,276.1	1,759.3	1,908.4	1.45
8,492.0	89.23	155.29	6,531.1	-1,357.7	1,797.1	1,998.4	0.23
8,581.0	89.56	153.80	6,532.0	-1,438.1	1,835.3	2,087.4	1.71
8,671.0	90.40	154.51	6,532.0	-1,519.1	1,874.6	2,177.4	1.22
8,760.0	89.23	153.81	6,532.3	-1,599.2	1,913.4	2,266.4	1.53
8,850.0	90.20	154.61	6,532.8	-1,680.2	1,952.5	2,356.4	1.40
8,939.0	90.33	154.62	6,532.4	-1,760.6	1,990.7	2,445.4	0.15
9,029.0	90.34	153.73	6,531.8	-1,841.6	2,029.9	2,535.4	0.99
9,118.0	89.73	154.70	6,531.8	-1,921.8	2,068.6	2,624.4	1.29
9,208.0	89.16	154.66	6,532.6	-2,003.1	2,107.1	2,714.4	0.63
9,297.0	89.13	155.16	6,534.0	-2,083.7	2,144.8	2,803.4	0.56
9,387.0	89.26	154.64	6,535.2	-2,165.2	2,183.0	2,893.4	0.60
9,476.0	88.43	154.16	6,537.0	-2,245.5	2,221.4	2,982.3	1.08
9,566.0	89.76	154.75	6,538.5	-2,326.6	2,260.2	3,072.3	1.62
9,656.0	89.83	153.95	6,538.8	-2,407.8	2,299.2	3,162.3	0.89
9,745.0	89.25	155.05	6,539.5	-2,488.1	2,337.5	3,251.3	1.40
9,839.0	88.59	154.29	6,541.3	-2,573.1	2,377.7	3,345.3	1.07
9,855.0	89.09	154.70	6,541.6	-2,587.5	2,384.6	3,361.3	4.03
CRVL							
9,933.0	91.50	156.71	6,541.2	-2,658.6	2,416.7	3,439.3	4.03

JUL 20 2015



EOW Completion Report



Company: Antero
Project: Doddridge County WV
Site: Robert Williams Pad: Leggett/ Pike Pad/James/M
Well: James Unit 1H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well James Unit 1H
TVD Reference: Precision 523: GL 990' + KB 19' @ 1009.0usft
MD Reference: Precision 523: GL 990' + KB 19' @ 1009.0usft
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)
10,027.0	91.24	155.19	6,538.9	-2,744.4	2,455.0	3,533.2	1.64
10,120.0	90.54	154.72	6,537.5	-2,828.6	2,494.3	3,626.2	0.91
10,215.0	90.50	153.30	6,536.6	-2,914.0	2,536.0	3,721.2	1.50
10,308.0	89.63	155.24	6,536.5	-2,997.8	2,576.3	3,814.2	2.29
10,402.0	89.53	154.21	6,537.2	-3,082.8	2,616.5	3,908.2	1.10
10,496.0	89.50	153.77	6,538.0	-3,167.3	2,657.7	4,002.2	0.47
10,590.0	90.37	153.34	6,538.1	-3,251.4	2,699.6	4,096.2	1.03
10,684.0	89.43	154.22	6,538.3	-3,335.8	2,741.1	4,190.1	1.37
10,778.0	90.47	155.54	6,538.4	-3,420.9	2,781.0	4,284.1	1.79
10,872.0	90.67	155.56	6,537.4	-3,506.4	2,819.9	4,378.1	0.21
10,961.0	90.13	155.06	6,536.8	-3,587.3	2,857.1	4,467.1	0.83
11,051.0	90.07	155.03	6,536.6	-3,668.9	2,895.0	4,557.1	0.07
11,140.0	90.33	154.68	6,536.3	-3,749.5	2,932.9	4,646.1	0.49
11,230.0	90.07	154.37	6,536.0	-3,830.7	2,971.6	4,736.1	0.45
11,320.0	89.36	153.96	6,536.5	-3,911.7	3,010.8	4,826.1	0.91
11,409.0	88.46	153.64	6,538.2	-3,991.5	3,050.1	4,915.1	1.07
11,499.0	90.17	154.83	6,539.2	-4,072.6	3,089.2	5,005.1	2.31
11,588.0	89.97	154.19	6,539.1	-4,152.9	3,127.5	5,094.1	0.75
11,677.0	89.93	154.22	6,539.2	-4,233.1	3,166.2	5,183.1	0.06
11,767.0	90.13	153.29	6,539.2	-4,313.8	3,206.0	5,273.1	1.06
11,856.0	89.83	155.07	6,539.2	-4,393.9	3,244.8	5,362.0	2.03
11,946.0	90.44	154.77	6,539.0	-4,475.4	3,282.9	5,452.0	0.76
12,035.0	90.80	154.72	6,538.0	-4,555.9	3,320.9	5,541.0	0.41
12,125.0	90.03	154.82	6,537.4	-4,637.3	3,359.3	5,631.0	0.86
12,214.0	90.44	154.44	6,537.0	-4,717.7	3,397.4	5,720.0	0.63
12,304.0	90.37	153.28	6,536.4	-4,798.5	3,437.0	5,810.0	1.29
12,393.0	90.47	154.46	6,535.7	-4,878.4	3,476.2	5,899.0	1.33
12,483.0	90.64	156.04	6,534.8	-4,960.1	3,513.9	5,989.0	1.77
12,572.0	90.90	155.40	6,533.6	-5,041.3	3,550.5	6,078.0	0.78
12,662.0	90.97	156.16	6,532.2	-5,123.3	3,587.4	6,167.9	0.85
12,751.0	89.53	153.68	6,531.8	-5,203.9	3,625.1	6,256.9	3.22
12,841.0	90.40	153.94	6,531.8	-5,284.7	3,664.9	6,346.9	1.01
12,931.0	90.30	152.97	6,531.3	-5,365.2	3,705.1	6,436.9	1.08
13,020.0	90.37	155.49	6,530.8	-5,445.3	3,743.8	6,525.9	2.83
13,109.0	90.54	154.50	6,530.1	-5,526.0	3,781.4	6,614.9	1.13
13,199.0	90.94	153.97	6,528.9	-5,607.0	3,820.5	6,704.9	0.74
13,288.0	90.94	153.22	6,527.4	-5,686.7	3,860.1	6,793.8	0.84
13,378.0	90.84	155.04	6,526.0	-5,767.7	3,899.4	6,883.8	2.03
13,467.0	91.44	154.97	6,524.3	-5,848.3	3,936.9	6,972.8	0.68
13,557.0	89.83	154.51	6,523.3	-5,929.7	3,975.4	7,062.8	1.86
13,646.0	90.57	155.61	6,523.0	-6,010.4	4,012.9	7,151.8	1.49
13,736.0	90.67	155.14	6,522.0	-6,092.2	4,050.4	7,241.8	0.53
13,825.0	91.04	155.09	6,520.7	-6,173.0	4,087.8	7,330.8	0.42
13,915.0	91.28	154.83	6,518.8	-6,254.5	4,125.9	7,420.7	0.39

JUL 20 2015



Company: Antero
Project: Doddridge County WV
Site: Robert Williams Pad: Leggett/ Pike Pad/James/M
Well: James Unit 1H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well James Unit 1H
TVD Reference: Precision 523: GL 990' + KB 19' @ 1009.0usft
MD Reference: Precision 523: GL 990' + KB 19' @ 1009.0usft
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)
14,004.0	91.65	154.48	6,516.6	-6,334.9	4,164.0	7,509.7	0.57
14,093.0	90.94	153.96	6,514.6	-6,415.0	4,202.7	7,598.7	0.99
14,183.0	91.01	153.33	6,513.0	-6,495.7	4,242.6	7,688.7	0.70
14,272.0	90.34	154.08	6,512.0	-6,575.4	4,282.1	7,777.6	1.13
14,362.0	90.97	155.80	6,510.9	-6,657.0	4,320.2	7,867.6	2.04
14,452.0	91.07	155.60	6,509.3	-6,739.0	4,357.2	7,957.6	0.25
14,541.0	91.41	155.98	6,507.4	-6,820.1	4,393.7	8,046.6	0.57
14,631.0	90.84	154.10	6,505.7	-6,901.7	4,431.7	8,136.5	2.18
14,720.0	91.14	153.66	6,504.1	-6,981.6	4,470.8	8,225.5	0.60
14,810.0	91.28	154.07	6,502.2	-7,062.4	4,510.5	8,315.5	0.48
14,900.0	90.84	154.91	6,500.5	-7,143.6	4,549.2	8,405.5	1.05
14,989.0	91.28	154.48	6,498.9	-7,224.0	4,587.3	8,494.5	0.69
15,079.0	90.47	154.68	6,497.5	-7,305.3	4,625.9	8,584.4	0.93
15,168.0	90.87	154.27	6,496.5	-7,385.6	4,664.2	8,673.4	0.64
15,250.0	90.14	153.33	6,495.8	-7,459.2	4,700.4	8,755.4	1.45
CRVL_B							
15,258.0	90.07	153.24	6,495.7	-7,466.3	4,704.0	8,763.4	1.45
15,347.0	90.57	154.04	6,495.3	-7,546.1	4,743.6	8,852.4	1.06
15,436.0	92.28	153.88	6,493.0	-7,626.0	4,782.6	8,941.4	1.93
15,526.0	91.41	154.33	6,490.1	-7,706.9	4,821.9	9,031.3	1.09
15,616.0	92.92	154.88	6,486.7	-7,788.2	4,860.5	9,121.3	1.79
15,705.0	92.31	155.86	6,482.7	-7,869.0	4,897.5	9,210.2	1.30
15,795.0	92.75	156.77	6,478.7	-7,951.3	4,933.6	9,300.0	1.12
15,817.0	92.96	156.35	6,477.6	-7,971.5	4,942.4	9,322.0	2.13
15,875.0	92.96	156.35	6,474.6	-8,024.6	4,965.6	9,379.9	0.00

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
6,551.0	6,332.7	286.2	911.6	MDLX
6,739.0	6,452.8	194.9	1,022.3	BRKT
6,795.0	6,480.1	158.1	1,054.4	TLLY
6,857.0	6,504.0	111.9	1,088.0	HMLN
6,877.0	6,510.2	95.8	1,098.2	MRCL_HOT
6,885.0	6,512.4	89.3	1,102.2	PRCL
6,943.0	6,524.4	39.8	1,129.9	PRCL_B
9,855.0	6,541.6	-2,587.5	2,384.6	CRVL
15,250.0	6,495.8	-7,459.2	4,700.4	CRVL_B

Checked By: _____ Approved By: _____ Date: _____