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WV GEOLOGICAL SURVEY
MORGANTOWN, WV



Antero Resources
Dorothy Unit 1H
Doddridge County WV
Northing: 14230768.62
Easting: 1736331.61
As Drilled



Genie Lightfoot
11:31, February 13 2014
Scientific Drilling
421 South Eagle Lane
Oklahoma City, OK

WELL DETAILS: Dorothy Unit 1H
Ground Level: 1332.0
Latitude: 38° 11' 18.788 N 80° 39' 41.367 W
Longitude: 1736331.61 38° 11' 18.788 N 80° 39' 41.367 W
Skot

REFERENCE INFORMATION
Coordinates (NED) Reference: Well Dorothy Unit 1H, Grid North
Vertical (TVD) Reference: Dorothy Unit 1H 1332.0 @ 1354.5 feet
Section (VS) Reference: Skot - (0.0N, 0.0E)
Measurement: Dorothy Unit 1H 1332.0 @ 1354.5 feet
Calculation Method: Minimum Curvature

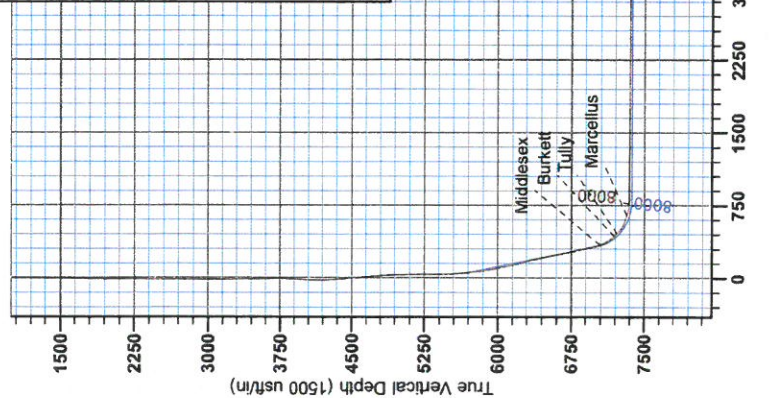
PROJECT DETAILS: Doddridge County WW
Coordinate System: Universal Transverse Mercator (US Survey Feet)
Datum: NAD 1983 (NAD83 CONUS)
Ellipsoid: Clarke 1866
Zone: Zone 17N (64 W to 75 W)
System Datum: Mean Sea Level

LEGEND

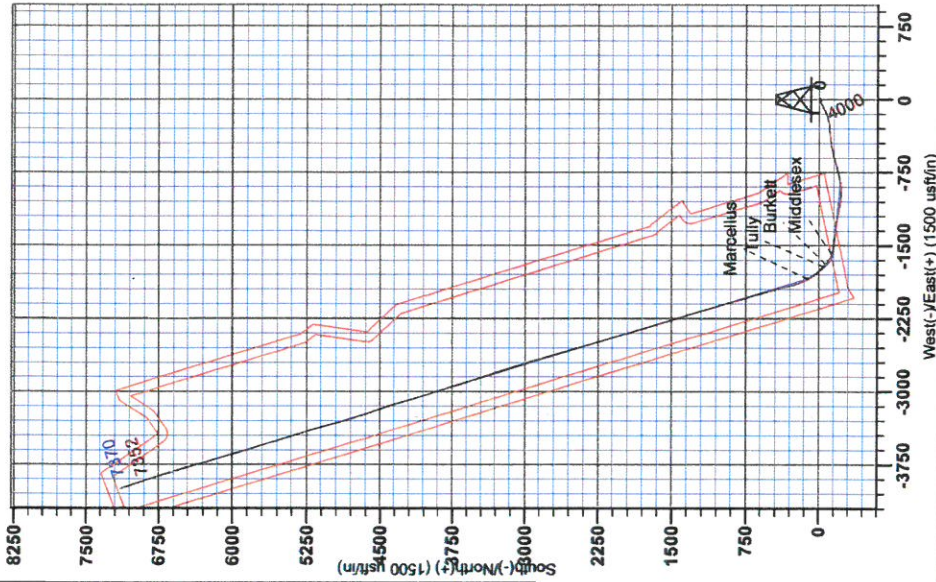
- - - Dorothy Unit 1H, Original Wellpath, Plan 4 V0
- As Drilled

DESIGN TARGET DETAILS

Name	+N/S	TVD	+E/W	Northing	Easting	Latitude	Longitude
SHL Dorothy Unit 1H	0.0	0.0	0.0	14230768.62	1736331.61	38° 11' 18.788 N	80° 39' 41.367 W
Actual BHL Dorothy Unit 1H	7143.1	7351.7	-4000.6	14230768.62	1736331.61	38° 11' 18.788 N	80° 39' 41.367 W



Admiralty to Grid North
True North: -0.21°
Magnetic North: -8.72°
Magnetic Field
Strength: 52316.2nT
Dip Angle: 66.11°
Year: 2015
Model: IGRF2010





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Antero Resources

**Doddridge County WV
Stewart Pad
Dorothy Unit 1H
Original Wellpath**

Design: As Drilled

EOW Completion Report

13 February, 2014



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GEOLOGICAL SURVEY
MORGANTOWN, WV

EOW Completion Report



Company: Antero Resources	Local Co-ordinate Reference: Well Dorothy Unit 1H
Project: Doddridge County WV	TVD Reference: Dorothy 1H 1332 GL + 22.5 KB @ 1354.5usft
Site: Stewart Pad	MD Reference: Dorothy 1H 1332 GL + 22.5 KB @ 1354.5usft
Well: Dorothy 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 Feet)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Zone 17N (84 W to 78 W)		

Site	Stewart Pad				
Site Position:		Northing:	14,230,768.62 usft	Latitude:	39° 11' 18.788 N
From:	Map	Easting:	1,736,331.61 usft	Longitude:	80° 39' 41.367 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.21 °

Well	Dorothy Unit 1H, Marcellus					
Well Position	+N/-S	0.0 usft	Northing:	14,230,768.62 usft	Latitude:	39° 11' 18.788 N
	+E/-W	0.0 usft	Easting:	1,736,331.61 usft	Longitude:	80° 39' 41.367 W
Position Uncertainty	2.0 usft		Wellhead Elevation:	1,354.5 usft	Ground Level:	1,332.0 usft

Wellbore	Original Wellpath				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/22/2013	-8.51	66.79	52,316

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	342.98	

Survey Program	Date 2/13/2014				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
109.5	3,395.5	Survey #1 Def Gyro to KOP (Original Well)	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper	
3,409.5	5,697.5	Survey #3 Final Gyro (Original Wellpath)	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper	
5,788.0	15,236.0	Survey #4 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
	109.5	0.35	144.63	109.5	-0.3	0.2	-0.3	0.32
	209.5	0.37	107.71	209.5	-0.6	0.7	-0.8	0.23
	309.5	0.20	180.27	309.5	-0.9	1.0	-1.1	0.36
	409.5	0.24	133.63	409.5	-1.2	1.1	-1.5	0.18
	509.5	0.27	170.00	509.5	-1.6	1.3	-1.9	0.16
	609.5	0.23	179.05	609.5	-2.0	1.4	-2.3	0.06
	709.5	0.26	161.71	709.5	-2.4	1.4	-2.8	0.08
	809.5	0.33	167.72	809.5	-2.9	1.6	-3.3	0.08
	909.5	0.18	210.50	909.5	-3.4	1.6	-3.7	0.23

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Wellbore: Original Wellpath
Design: As Drilled

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MD Reference: Dorothy 1H 1332 GL + 22.5 KB @ 1354.5usft
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)
1,009.5	0.27	190.74	1,009.5	-3.7	1.4	-4.0	0.12
1,109.5	0.21	150.65	1,109.5	-4.1	1.5	-4.4	0.17
1,209.5	0.37	159.80	1,209.5	-4.6	1.7	-4.9	0.17
1,309.5	0.38	136.08	1,309.5	-5.1	2.0	-5.5	0.15
1,409.5	0.38	164.14	1,409.5	-5.7	2.3	-6.1	0.18
1,509.5	0.33	143.24	1,509.5	-6.2	2.6	-6.7	0.14
1,609.5	0.70	149.04	1,609.5	-7.0	3.1	-7.6	0.37
1,709.5	0.46	118.83	1,709.5	-7.7	3.8	-8.5	0.38
1,809.5	0.67	144.49	1,809.5	-8.4	4.5	-9.3	0.32
1,909.5	0.45	127.51	1,909.5	-9.1	5.1	-10.2	0.27
2,009.5	0.54	128.42	2,009.5	-9.6	5.8	-10.9	0.09
2,109.5	0.71	134.82	2,109.5	-10.3	6.6	-11.8	0.18
2,209.5	0.41	110.97	2,209.4	-10.9	7.4	-12.6	0.37
2,309.5	0.55	114.26	2,309.4	-11.2	8.1	-13.1	0.14
2,409.5	0.63	111.91	2,409.4	-11.6	9.1	-13.8	0.08
2,509.5	0.56	114.48	2,509.4	-12.0	10.0	-14.5	0.07
2,609.5	0.30	135.97	2,609.4	-12.4	10.7	-15.0	0.30
2,709.5	0.11	243.64	2,709.4	-12.7	10.8	-15.3	0.35
2,809.5	0.31	280.94	2,809.4	-12.7	10.4	-15.1	0.23
2,909.5	0.18	283.84	2,909.4	-12.6	10.0	-14.9	0.13
3,009.5	0.42	273.12	3,009.4	-12.5	9.5	-14.7	0.25
3,109.5	0.17	258.21	3,109.4	-12.5	9.0	-14.6	0.26
3,209.5	0.25	272.60	3,209.4	-12.5	8.6	-14.5	0.10
3,309.5	0.36	312.30	3,309.4	-12.3	8.2	-14.2	0.23
3,395.5	0.46	294.03	3,395.4	-12.0	7.6	-13.7	0.19
3,409.5	0.62	280.03	3,409.4	-12.0	7.5	-13.6	1.47
3,509.5	6.02	268.68	3,509.2	-12.0	1.7	-12.0	5.41
3,609.5	10.21	264.74	3,608.2	-12.9	-12.3	-8.7	4.22
3,709.5	13.99	255.42	3,706.0	-16.8	-32.9	-6.4	4.24
3,809.5	18.53	245.73	3,802.0	-26.4	-59.1	-7.9	5.27
3,909.5	19.96	244.25	3,896.4	-40.3	-88.9	-12.5	1.51
4,009.5	20.68	243.43	3,990.1	-55.6	-120.1	-18.0	0.77
4,109.5	21.87	246.87	4,083.3	-70.8	-153.0	-22.9	1.72
4,209.5	22.53	254.00	4,175.9	-83.4	-188.6	-24.6	2.77
4,309.5	23.64	259.82	4,267.9	-92.3	-226.7	-21.8	2.54
4,409.5	25.16	265.40	4,359.0	-97.5	-267.7	-14.9	2.76
4,509.5	25.38	264.95	4,449.4	-101.1	-310.2	-5.9	0.29
4,609.5	24.71	263.72	4,540.0	-105.3	-352.3	2.5	0.85
4,709.5	23.03	263.02	4,631.5	-109.9	-392.5	9.8	1.70
4,809.5	24.33	263.47	4,723.1	-114.7	-432.4	16.9	1.31
4,909.5	24.29	260.04	4,814.2	-120.6	-473.1	23.2	1.41
5,009.5	23.40	258.10	4,905.7	-128.2	-512.8	27.5	1.19
5,109.5	24.05	257.21	4,997.2	-136.8	-552.1	30.8	0.74
5,209.5	23.28	255.68	5,088.8	-146.2	-591.1	33.2	0.98
5,309.5	23.85	254.37	5,180.5	-156.5	-629.8	34.6	0.77

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Database: Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
5,409.5	23.00	252.79	5,272.2	-167.8	-667.9	35.1	1.06
5,509.5	25.07	255.22	5,363.6	-179.0	-707.0	35.8	2.29
5,609.5	26.76	256.19	5,453.5	-189.7	-749.4	37.9	1.74
5,697.5	27.56	257.93	5,531.8	-198.7	-788.6	40.8	1.28
5,788.0	28.14	260.58	5,611.8	-206.6	-830.1	45.4	1.51
5,883.0	28.75	262.77	5,695.3	-213.1	-874.8	52.3	1.27
5,977.0	27.70	265.76	5,778.2	-217.6	-919.1	60.9	1.87
6,071.0	27.44	271.74	5,861.5	-218.6	-962.5	72.7	2.96
6,164.0	26.91	274.90	5,944.3	-216.1	-1,004.9	87.5	1.65
6,259.0	27.73	275.82	6,028.7	-212.0	-1,048.3	104.1	0.97
6,353.0	27.96	279.12	6,111.8	-206.3	-1,091.8	122.3	1.66
6,447.0	28.40	280.44	6,194.6	-198.8	-1,135.6	142.3	0.81
6,541.0	29.55	281.58	6,276.9	-190.1	-1,180.3	163.7	1.36
6,635.0	27.48	280.31	6,359.5	-181.5	-1,224.3	184.8	2.29
6,730.0	27.52	277.45	6,443.7	-174.8	-1,267.6	203.9	1.39
6,824.0	27.87	275.96	6,527.0	-169.7	-1,311.0	221.5	0.83
6,918.0	28.67	279.03	6,609.8	-163.9	-1,355.1	240.0	1.77
7,014.0	27.71	278.19	6,694.4	-157.1	-1,400.0	259.6	1.08
7,108.0	27.79	277.45	6,777.6	-151.1	-1,443.3	278.0	0.38
7,204.0	27.70	275.87	6,862.5	-145.9	-1,487.7	295.9	0.77
7,296.0	28.49	278.42	6,943.7	-140.5	-1,530.7	313.7	1.56
7,343.0	27.87	279.12	6,985.1	-137.1	-1,552.6	323.3	1.49
7,373.0	29.26	283.85	7,011.5	-134.3	-1,566.7	330.2	8.85
7,404.0	31.13	289.76	7,038.3	-129.7	-1,581.6	338.9	11.32
7,415.0	31.71	291.50	7,047.6	-127.7	-1,587.0	342.4	9.81
Middlesex							
7,434.0	32.77	294.38	7,063.7	-123.8	-1,596.3	348.9	9.81
7,465.0	34.56	298.19	7,089.5	-116.2	-1,611.7	360.7	8.93
7,495.0	37.37	301.09	7,113.8	-107.4	-1,627.0	373.5	10.95
7,525.0	40.38	302.80	7,137.2	-97.5	-1,642.9	387.7	10.65
7,556.0	43.18	304.43	7,160.3	-86.0	-1,660.1	403.7	9.69
7,586.0	45.90	306.81	7,181.7	-73.8	-1,677.2	420.4	10.64
7,603.0	47.53	308.04	7,193.3	-66.2	-1,687.1	430.5	10.96
Burkett							
7,617.0	48.89	309.00	7,202.6	-59.7	-1,695.2	439.1	10.96
7,647.0	51.70	311.47	7,221.8	-44.8	-1,712.8	458.5	11.31
Tully							
7,677.0	55.05	313.57	7,239.7	-28.6	-1,730.6	479.2	12.50
7,707.0	58.67	316.20	7,256.1	-10.8	-1,748.4	501.4	14.12
7,738.0	62.17	317.09	7,271.4	8.8	-1,766.9	525.6	11.56
7,768.0	65.51	320.17	7,284.6	29.0	-1,784.6	550.1	14.45
7,799.0	68.86	323.16	7,296.6	51.4	-1,802.4	576.7	13.99
7,830.0	70.17	326.67	7,307.5	75.2	-1,819.0	604.3	11.42
7,860.0	72.61	329.48	7,317.1	99.3	-1,834.1	631.8	12.04

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Site: Stewart Pad
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7,876.0	74.10	330.70	7,321.7	112.6	-1,841.7	646.7	11.86
Marcellus							
7,891.0	75.51	331.83	7,325.6	125.3	-1,848.7	660.9	11.86
7,922.0	78.61	333.61	7,332.5	152.1	-1,862.5	690.6	11.46
7,953.0	81.95	336.06	7,337.8	179.8	-1,875.5	720.9	13.29
7,985.0	85.93	339.32	7,341.1	209.2	-1,887.6	752.5	16.04
8,010.0	87.49	341.79	7,342.6	232.7	-1,895.9	777.5	11.67
8,060.0	89.63	346.77	7,343.8	280.8	-1,909.4	827.4	10.84
8,137.0	91.19	346.27	7,343.3	355.7	-1,927.4	904.3	2.13
8,236.0	87.78	343.85	7,344.2	451.3	-1,952.9	1,003.2	4.22
8,327.0	89.76	343.73	7,346.1	538.7	-1,978.3	1,094.2	2.18
8,422.0	90.31	343.55	7,346.1	629.8	-2,005.0	1,189.1	0.61
8,517.0	90.48	343.37	7,345.4	720.9	-2,032.1	1,284.1	0.26
8,611.0	90.48	342.40	7,344.6	810.7	-2,059.7	1,378.1	1.03
8,706.0	89.25	344.25	7,344.8	901.7	-2,087.0	1,473.1	2.34
8,801.0	89.08	344.24	7,346.2	993.2	-2,112.8	1,568.1	0.18
8,895.0	90.24	343.57	7,346.8	1,083.5	-2,138.8	1,662.1	1.43
8,990.0	90.31	343.46	7,346.3	1,174.6	-2,165.8	1,757.1	0.14
9,085.0	89.13	343.25	7,346.8	1,265.6	-2,193.0	1,852.1	1.26
9,179.0	89.43	342.05	7,348.0	1,355.3	-2,221.0	1,946.1	1.32
9,274.0	89.87	342.23	7,348.6	1,445.7	-2,250.2	2,041.0	0.50
9,369.0	89.60	341.35	7,349.0	1,536.0	-2,279.9	2,136.0	0.97
9,464.0	90.57	343.81	7,348.9	1,626.6	-2,308.3	2,231.0	2.78
9,559.0	90.31	343.11	7,348.1	1,717.7	-2,335.3	2,326.0	0.79
9,653.0	89.08	341.79	7,348.6	1,807.3	-2,363.7	2,420.0	1.92
9,748.0	90.40	344.25	7,349.1	1,898.1	-2,391.4	2,515.0	2.94
9,842.0	89.08	343.28	7,349.5	1,988.4	-2,417.7	2,609.0	1.74
9,937.0	89.16	345.40	7,350.9	2,079.8	-2,443.3	2,703.9	2.23
10,032.0	90.31	344.34	7,351.4	2,171.5	-2,468.1	2,798.9	1.65
10,126.0	90.40	344.78	7,350.8	2,262.1	-2,493.2	2,892.8	0.48
10,221.0	90.40	344.16	7,350.1	2,353.7	-2,518.6	2,987.8	0.65
10,316.0	89.87	343.81	7,349.9	2,445.0	-2,544.8	3,082.8	0.67
10,411.0	91.10	343.90	7,349.1	2,536.2	-2,571.2	3,177.8	1.30
10,506.0	91.54	343.99	7,346.9	2,627.5	-2,597.5	3,272.7	0.47
10,601.0	90.75	342.93	7,345.0	2,718.6	-2,624.5	3,367.7	1.39
10,696.0	90.84	343.02	7,343.7	2,809.4	-2,652.3	3,462.7	0.13
10,791.0	89.70	342.69	7,343.3	2,900.2	-2,680.4	3,557.7	1.25
10,885.0	89.87	342.59	7,343.6	2,989.9	-2,708.4	3,651.7	0.21
10,980.0	90.22	343.72	7,343.5	3,080.8	-2,735.9	3,746.7	1.25
11,075.0	89.78	342.67	7,343.5	3,171.7	-2,763.4	3,841.7	1.20
11,170.0	90.40	341.70	7,343.4	3,262.2	-2,792.5	3,936.7	1.21
11,265.0	90.57	341.88	7,342.6	3,352.4	-2,822.1	4,031.7	0.26
11,360.0	90.92	342.32	7,341.4	3,442.8	-2,851.3	4,126.6	0.59
11,455.0	90.13	342.40	7,340.5	3,533.3	-2,880.1	4,221.6	0.84
11,549.0	90.30	342.97	7,340.1	3,623.1	-2,908.1	4,315.6	0.63

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EOW Completion Report



Company: Antero Resources
 Project: Doddridge County WV
 Site: Stewart Pad
 Well: Dorothy Unit 1H
 Wellbore: Original Wellpath
 Design: As Drilled

Local Co-ordinate Reference: Well Dorothy Unit 1H
 TVD Reference: Dorothy 1H 1332 GL + 22.5 KB @ 1354.5usft
 MD Reference: Dorothy 1H 1332 GL + 22.5 KB @ 1354.5usft
 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)
11,644.0	90.40	343.46	7,339.5	3,714.0	-2,935.5	4,410.6	0.53
11,739.0	88.37	341.70	7,340.6	3,804.7	-2,964.0	4,505.6	2.83
11,834.0	89.60	342.23	7,342.2	3,895.0	-2,993.4	4,600.6	1.41
11,928.0	90.66	341.96	7,342.0	3,984.4	-3,022.3	4,694.6	1.16
12,023.0	89.52	343.90	7,341.9	4,075.2	-3,050.2	4,789.5	2.37
12,118.0	89.87	344.42	7,342.4	4,166.6	-3,076.1	4,884.5	0.66
12,213.0	91.01	344.42	7,341.7	4,258.1	-3,101.6	4,979.5	1.20
12,308.0	90.48	343.19	7,340.4	4,349.3	-3,128.1	5,074.5	1.41
12,403.0	88.02	339.06	7,341.7	4,439.2	-3,158.8	5,169.4	5.06
12,498.0	88.90	341.00	7,344.2	4,528.5	-3,191.3	5,264.2	2.24
12,593.0	90.31	340.73	7,344.9	4,618.2	-3,222.4	5,359.2	1.51
12,689.0	90.92	341.88	7,343.8	4,709.1	-3,253.2	5,455.1	1.36
12,784.0	90.84	343.11	7,342.4	4,799.7	-3,281.7	5,550.1	1.30
12,878.0	90.13	344.51	7,341.6	4,890.0	-3,307.9	5,644.1	1.67
12,973.0	90.57	344.16	7,341.0	4,981.5	-3,333.6	5,739.0	0.59
13,068.0	88.55	344.86	7,341.7	5,073.0	-3,359.0	5,834.0	2.25
13,163.0	89.25	343.46	7,343.6	5,164.4	-3,384.9	5,929.0	1.65
13,258.0	90.04	342.32	7,344.2	5,255.2	-3,412.8	6,024.0	1.46
13,353.0	92.24	343.19	7,342.3	5,345.9	-3,441.0	6,118.9	2.49
13,448.0	92.51	342.58	7,338.3	5,436.6	-3,468.9	6,213.8	0.70
13,542.0	92.25	342.03	7,334.4	5,526.1	-3,497.5	6,307.8	0.65
13,635.0	89.52	342.40	7,333.0	5,614.6	-3,525.9	6,400.7	2.96
13,730.0	89.60	342.49	7,333.7	5,705.2	-3,554.5	6,495.7	0.13
13,825.0	89.52	343.46	7,334.4	5,796.0	-3,582.3	6,590.7	1.02
13,920.0	89.78	343.28	7,335.0	5,887.0	-3,609.5	6,685.7	0.33
14,014.0	89.34	343.02	7,335.8	5,977.0	-3,636.8	6,779.7	0.54
14,109.0	89.60	342.75	7,336.6	6,067.8	-3,664.7	6,874.7	0.39
14,204.0	88.02	343.99	7,338.6	6,158.8	-3,691.9	6,969.7	2.11
14,299.0	90.57	345.13	7,339.8	6,250.3	-3,717.2	7,064.6	2.94
14,394.0	89.34	343.72	7,339.8	6,341.8	-3,742.7	7,159.6	1.97
14,489.0	89.06	343.65	7,341.2	6,433.0	-3,769.4	7,254.6	0.30
14,584.0	90.31	343.37	7,341.7	6,524.1	-3,796.3	7,349.6	1.35
14,679.0	88.11	343.19	7,343.0	6,615.1	-3,823.7	7,444.6	2.32
14,774.0	88.81	342.58	7,345.6	6,705.8	-3,851.6	7,539.5	0.98
14,869.0	89.43	340.91	7,347.0	6,796.0	-3,881.4	7,634.5	1.87
14,964.0	89.34	341.17	7,348.0	6,885.9	-3,912.2	7,729.4	0.29
15,059.0	89.34	341.35	7,349.1	6,975.8	-3,942.8	7,824.4	0.19
15,153.0	88.99	340.38	7,350.5	7,064.6	-3,973.6	7,918.3	1.10
15,184.0	89.09	340.47	7,351.0	7,093.8	-3,984.0	7,949.3	0.43
15,236.0	89.47	342.12	7,351.7	7,143.1	-4,000.6	8,001.2	3.26



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Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,415.0	7,047.6	-127.7	-1,587.0	Middlesex
7,603.0	7,193.3	-66.2	-1,687.1	Burkett
7,647.0	7,221.8	-44.8	-1,712.8	Tully
7,876.0	7,321.7	112.6	-1,841.7	Marcellus

Checked By: _____ Approved By: _____ Date: _____

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 AUG 03 2015
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 MORGANTOWN, WV