

Azimuths to Grid North:
 True North: -0.09°
 Magnetic North: -8.56°
 Magnetic Field
 Strength: 52251.0GNT
 Dip Angle: 66.94°
 Date: 4/15/2015
 Model: BGGM2014

To convert Magnetic North to Grid, Subtract 8.56°
 To convert True North to Grid, Subtract 0.09°



Scardina Unit 3H
Tyler County WV
Northing: 14331693.32
Easting: 1681964.25
As Drilled

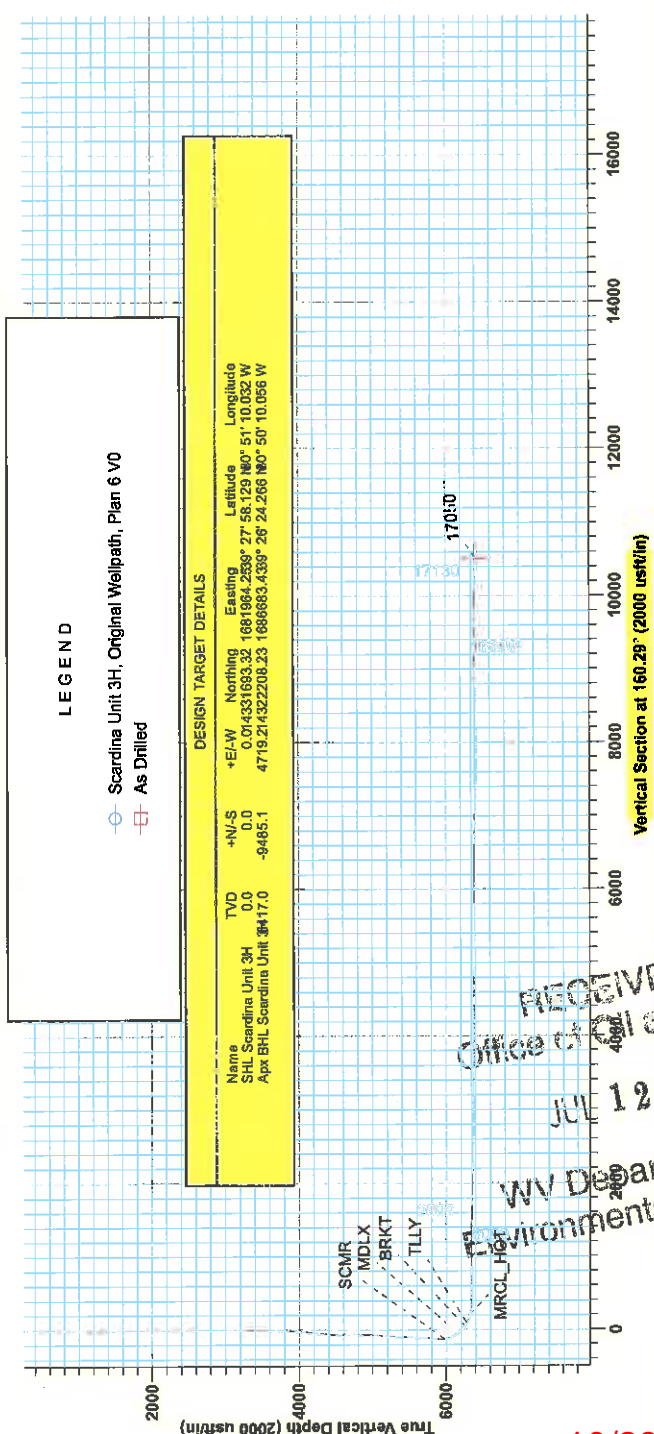
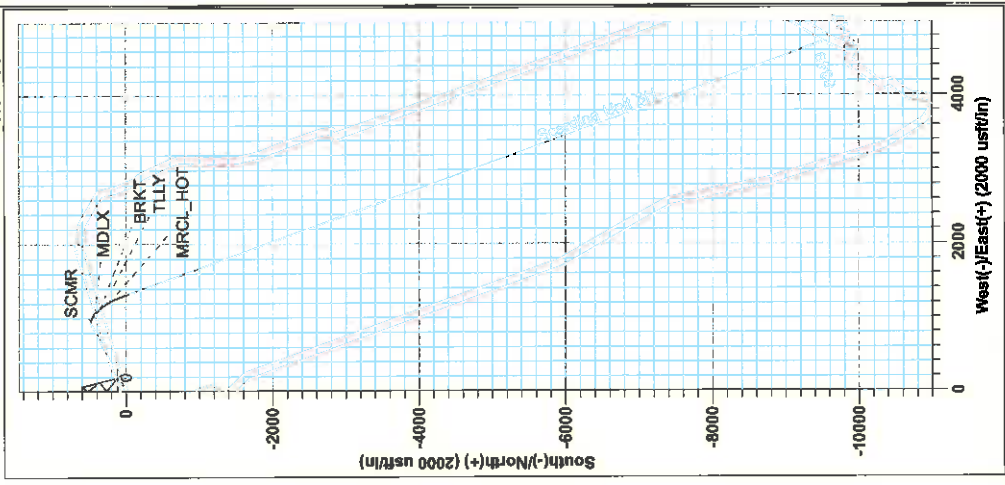
Genie Lightfoot
 11:30, April 23 2015
 Scientific Drilling
 11220 NW 10th Street
 Yukon OK 73099

WELL DETAILS Scardina Unit 3H
 Ground Level: 814.0
 Easting: 1681964.25
 Northing: 14331693.32
 Longitude: 80° 51' 10.032 W
 Latitude: 39° 27' 55.129 N

PROJECT DETAILS: Tyler 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

SITE DETAILS: Weigle East Pad, Dean/Goodfellow/Hawkeye/Scardina
 Site Centre Northing: 14331712.20
 Easting: 1681956.94
 Positional Uncertainty: 0.0
 Convergence: 0.09
 Local North: Grid

Precision 52: CL 814' + KB 10' @ 803.0usft
 G: 814.0



LEGEND
 ○ Scardina Unit 3H, Original Wellpath, Plan 6 V0
 ⊕ As Drilled

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL Scardina Unit 3H	0.0	0.0	0.0	0.014331693.32	1681964.2539° 27' 55.129 N	51° 10.032 W	
Apx BHL Scardina Unit 3H#17.0	-9485.1	-9485.1		47719.214322208.23	1680663.4339° 25' 24.266 N	50° 10.056 W	

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10/28/2016



Antero

Tyler County WV

Weigle East Pad: Dean/Goodfellow/Hawkeye/Scardina

Scardina Unit 3H

Original Wellpath

Design: As Drilled

EOW Completion Report

23 April, 2015



10/28/2016



Company:	Antero	Local Co-ordinate Reference:	Well Scardina Unit 3H
Project:	Tyler County WV	TVD Reference:	Precision 523: GL 814' + KB 19' @ 833.0usft
Site:	Weigle East Pad: Dean/Goodfellow/Hawkeye/Scardina	MD Reference:	Precision 523: GL 814' + KB 19' @ 833.0usft
Well:	Scardina Unit 3H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Oklahoma District

Project	Tyler County WV, Tyler Co West Virginia		
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	Weigle East Pad: Dean/Goodfellow/Hawkeye/Scardina				
Site Position:		Northing:	14,331,712.20 usft	Latitude:	39° 27' 58.315 N
From:	Map	Easting:	1,681,956.94 usft	Longitude:	80° 51' 10.125 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.09 °

Well	Scardina Unit 3H, Marcellus					
Well Position	+N/-S	0.0 usft	Northing:	14,331,693.32 usft	Latitude:	39° 27' 58.129 N
	+E/-W	0.0 usft	Easting:	1,681,964.25 usft	Longitude:	80° 51' 10.032 W
Position Uncertainty		2.0 usft	Wellhead Elevation:	833.0 usft	Ground Level:	814.0 usft

Wellbore	Original Wellpath				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	4/15/2015	-8.47	66.94	52,251

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	160.29	

Survey Program	Date 4/23/2015				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
107.0	5,807.8	Survey #8 Final Survey to KOP (Original V	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4	
5,807.8	17,050.0	Survey #9 SDI 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
	107.0	0.12	67.90	107.0	0.0	0.1	0.0	0.11
	132.0	0.16	108.61	132.0	0.0	0.2	0.0	0.42
	157.0	0.14	84.79	157.0	0.0	0.2	0.0	0.26
	182.0	0.13	88.12	182.0	0.0	0.3	0.0	0.05
	207.0	0.13	93.63	207.0	0.0	0.3	0.1	0.05
	232.0	0.06	47.42	232.0	0.0	0.4	0.1	0.39
	257.0	0.09	56.11	257.0	0.1	0.4	0.1	0.13
	282.0	0.10	54.32	282.0	0.1	0.4	0.1	0.04
	307.0	0.14	48.19	307.0	0.1	0.5	0.0	0.17
	332.0	0.20	52.84	332.0	0.2	0.5	0.0	0.25

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Company:	Antero	Local Co-ordinate Reference:	Well Scardina Unit 3H
Project:	Tyler County WV	TVD Reference:	Precision 523: GL 814' + KB 19' @ 833.0usft
Site:	Weigle East Pad: Dean/Goodfellow/Hawkeye/Sca	MD Reference:	Precision 523: GL 814' + KB 19' @ 833.0usft
Well:	Scardina Unit 3H	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)
357.0	0.15	77.59	357.0	0.2	0.6	0.0	0.36
382.0	0.17	58.61	382.0	0.2	0.7	0.0	0.23
407.0	0.15	97.84	407.0	0.2	0.7	0.0	0.44
432.0	0.16	59.42	432.0	0.3	0.8	0.0	0.41
457.0	0.10	51.35	457.0	0.3	0.8	0.0	0.25
482.0	0.10	44.69	482.0	0.3	0.9	0.0	0.05
507.0	0.17	55.48	507.0	0.4	0.9	0.0	0.30
532.0	0.19	55.27	532.0	0.4	1.0	0.0	0.08
557.0	0.18	64.69	557.0	0.4	1.1	-0.1	0.13
582.0	0.47	79.12	582.0	0.5	1.2	0.0	1.20
607.0	0.94	83.73	607.0	0.5	1.5	0.0	1.89
632.0	1.51	86.22	632.0	0.6	2.0	0.2	2.29
657.0	1.99	85.04	657.0	0.6	2.8	0.4	1.93
682.0	2.43	84.05	682.0	0.7	3.7	0.6	1.77
707.0	3.24	78.16	706.9	0.9	5.0	0.8	3.44
732.0	4.22	75.25	731.9	1.3	6.5	1.0	3.99
757.0	5.24	74.85	756.8	1.8	8.5	1.2	4.08
782.0	5.90	73.74	781.7	2.5	10.9	1.3	2.67
807.0	6.52	71.49	806.5	3.3	13.5	1.4	2.66
832.0	6.71	69.88	831.4	4.2	16.2	1.5	1.06
857.0	6.94	66.82	856.2	5.3	18.9	1.4	1.72
882.0	7.14	61.18	881.0	6.7	21.7	1.0	2.88
907.0	7.51	50.08	905.8	8.5	24.3	0.2	5.84
932.0	7.73	46.64	930.6	10.7	26.8	-1.0	2.03
957.0	7.81	46.02	955.3	13.0	29.2	-2.4	0.46
982.0	7.71	48.03	980.1	15.3	31.7	-3.7	1.16
1,007.0	7.20	57.62	1,004.9	17.3	34.3	-4.7	5.37
1,032.0	6.91	67.98	1,029.7	18.7	37.0	-5.1	5.21
1,057.0	6.63	74.28	1,054.5	19.6	39.8	-5.1	3.17
1,082.0	6.32	77.98	1,079.4	20.3	42.5	-4.8	2.08
1,107.0	5.81	79.61	1,104.2	20.8	45.1	-4.4	2.15
1,132.0	5.50	80.96	1,129.1	21.2	47.5	-4.0	1.35
1,157.0	5.11	81.45	1,154.0	21.6	49.8	-3.5	1.57
1,182.0	4.73	82.16	1,178.9	21.9	51.9	-3.1	1.54
1,207.0	4.33	82.48	1,203.8	22.2	53.9	-2.7	1.60
1,232.0	3.95	83.41	1,228.8	22.4	55.7	-2.3	1.54
1,257.0	3.65	84.75	1,253.7	22.6	57.3	-1.9	1.25
1,282.0	3.39	85.22	1,278.7	22.7	58.8	-1.5	1.05
1,307.0	3.12	85.47	1,303.6	22.8	60.3	-1.2	1.08
1,332.0	2.78	84.81	1,328.6	22.9	61.5	-0.8	1.37
1,357.0	2.46	85.51	1,353.6	23.0	62.7	-0.5	1.29
1,382.0	2.38	85.13	1,378.6	23.1	63.7	-0.3	0.33
1,407.0	2.02	85.46	1,403.5	23.2	64.7	0.0	1.44
1,432.0	1.66	87.51	1,428.5	23.2	65.5	0.2	1.46



Company: Antero	Local Co-ordinate Reference: Well Scardina Unit 3H
Project: Tyler County WV	TVD Reference: Precision 523: GL 814' + KB 19' @ 833.0usft
Site: Weigle East Pad: Dean/Goodfellow/Hawkeye/Sca	MD Reference: Precision 523: GL 814' + KB 19' @ 833.0usft
Well: Scardina Unit 3H	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)
1,457.0	1.53	87.34	1,453.5	23.3	66.2	0.4	0.52
1,482.0	1.34	90.35	1,478.5	23.3	66.8	0.6	0.82
1,507.0	1.05	84.77	1,503.5	23.3	67.3	0.8	1.25
1,532.0	0.92	92.89	1,528.5	23.3	67.8	0.9	0.76
1,557.0	0.78	95.55	1,553.5	23.3	68.1	1.1	0.58
1,582.0	0.70	96.89	1,578.5	23.2	68.4	1.2	0.33
1,607.0	0.65	94.23	1,603.5	23.2	68.7	1.3	0.24
1,632.0	0.43	95.86	1,628.5	23.2	69.0	1.4	0.88
1,657.0	0.32	100.45	1,653.5	23.2	69.1	1.5	0.46
1,682.0	0.24	93.85	1,678.5	23.2	69.3	1.6	0.34
1,707.0	0.12	98.67	1,703.5	23.2	69.3	1.6	0.48
1,732.0	0.18	101.98	1,728.5	23.1	69.4	1.6	0.24
1,757.0	0.15	86.35	1,753.5	23.1	69.5	1.6	0.22
1,782.0	0.19	117.13	1,778.5	23.1	69.5	1.7	0.39
1,807.0	0.12	122.27	1,803.5	23.1	69.6	1.7	0.29
1,832.0	0.08	123.34	1,828.5	23.1	69.6	1.8	0.16
1,857.0	0.10	106.92	1,853.5	23.0	69.7	1.8	0.13
1,882.0	0.05	15.21	1,878.5	23.0	69.7	1.8	0.45
1,907.0	0.05	10.11	1,903.5	23.1	69.7	1.8	0.02
1,932.0	0.07	39.91	1,928.5	23.1	69.7	1.8	0.15
1,957.0	0.09	344.48	1,953.5	23.1	69.7	1.7	0.31
1,982.0	0.14	339.74	1,978.5	23.2	69.7	1.7	0.20
2,007.0	0.09	328.60	2,003.5	23.2	69.7	1.6	0.22
2,032.0	0.14	326.23	2,028.5	23.3	69.6	1.6	0.20
2,057.0	0.11	327.61	2,053.5	23.3	69.6	1.5	0.12
2,082.0	0.14	325.21	2,078.5	23.4	69.6	1.5	0.12
2,107.0	0.02	72.88	2,103.5	23.4	69.6	1.5	0.59
2,132.0	0.09	4.80	2,128.5	23.4	69.6	1.4	0.34
2,157.0	0.06	328.56	2,153.5	23.4	69.6	1.4	0.22
2,182.0	0.08	251.45	2,178.5	23.4	69.6	1.4	0.35
2,207.0	0.08	310.10	2,203.5	23.4	69.5	1.4	0.31
2,232.0	0.02	357.16	2,228.5	23.5	69.5	1.4	0.27
2,257.0	0.06	136.71	2,253.5	23.4	69.5	1.4	0.31
2,282.0	0.03	149.00	2,278.5	23.4	69.5	1.4	0.13
2,307.0	0.20	229.80	2,303.5	23.4	69.5	1.4	0.79
2,332.0	0.15	229.99	2,328.5	23.4	69.4	1.4	0.20
2,357.0	0.08	313.45	2,353.5	23.3	69.4	1.4	0.65
2,382.0	0.11	265.10	2,378.5	23.4	69.4	1.4	0.16
2,407.0	0.12	245.94	2,403.5	23.3	69.3	1.4	0.16
2,432.0	0.11	262.27	2,428.5	23.3	69.3	1.4	0.14
2,457.0	0.20	276.43	2,453.5	23.3	69.2	1.4	0.39
2,482.0	0.03	224.58	2,478.5	23.3	69.2	1.4	0.73
2,507.0	0.05	220.18	2,503.5	23.3	69.1	1.4	0.08
2,532.0	0.08	233.14	2,528.5	23.3	69.1	1.4	0.13
2,557.0	0.11	238.60	2,553.5	23.3	69.1	1.4	0.13

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Company:	Antero	Local Co-ordinate Reference:	Well Scardina Unit 3H
Project:	Tyler County WV	TVD Reference:	Precision 523: GL 814' + KB 19' @ 833.0usft
Site:	Weigle East Pad. Dean/Goodfellow/Hawkeye/Sc	MD Reference:	Precision 523: GL 814' + KB 19' @ 833.0usft
Well:	Scardina Unit 3H	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)
2,582.0	0.14	241.56	2,578.5	23.2	69.0	1.4	0.12
2,607.0	0.17	243.40	2,603.5	23.2	69.0	1.4	0.12
2,632.0	0.20	271.13	2,628.5	23.2	68.9	1.4	0.37
2,657.0	0.10	262.61	2,653.5	23.2	68.8	1.4	0.41
2,682.0	0.10	277.44	2,678.5	23.2	68.8	1.4	0.10
2,707.0	0.13	284.30	2,703.5	23.2	68.7	1.3	0.13
2,732.0	0.11	278.73	2,728.5	23.2	68.7	1.3	0.09
2,757.0	0.20	285.55	2,753.5	23.2	68.6	1.3	0.37
2,782.0	0.22	293.91	2,778.5	23.3	68.5	1.2	0.15
2,807.0	0.20	275.50	2,803.5	23.3	68.5	1.2	0.28
2,832.0	0.17	262.72	2,828.5	23.3	68.4	1.1	0.20
2,857.0	0.17	282.76	2,853.5	23.3	68.3	1.1	0.24
2,882.0	0.17	290.77	2,878.5	23.3	68.2	1.1	0.09
2,907.0	0.18	274.05	2,903.5	23.3	68.2	1.0	0.21
2,932.0	0.18	288.56	2,928.5	23.3	68.1	1.0	0.18
2,957.0	0.23	278.85	2,953.5	23.4	68.0	0.9	0.24
2,982.0	0.33	253.73	2,978.5	23.4	67.9	0.9	0.62
3,007.0	0.32	275.87	3,003.5	23.3	67.7	0.9	0.50
3,032.0	0.26	295.02	3,028.5	23.4	67.6	0.8	0.45
3,057.0	0.24	301.68	3,053.5	23.4	67.5	0.7	0.14
3,082.0	0.20	279.30	3,078.5	23.5	67.4	0.7	0.38
3,107.0	0.31	251.56	3,103.5	23.4	67.3	0.6	0.65
3,132.0	0.15	249.70	3,128.5	23.4	67.2	0.6	0.64
3,157.0	0.31	300.02	3,153.5	23.4	67.1	0.6	0.97
3,182.0	0.31	286.71	3,178.5	23.5	67.0	0.5	0.29
3,207.0	0.30	270.41	3,203.5	23.5	66.9	0.4	0.35
3,232.0	0.32	267.28	3,228.5	23.5	66.8	0.4	0.10
3,257.0	0.45	267.60	3,253.5	23.5	66.6	0.3	0.52
3,282.0	0.10	241.58	3,278.5	23.5	66.5	0.3	1.45
3,307.0	0.26	288.48	3,303.5	23.5	66.4	0.3	0.82
3,332.0	0.34	307.20	3,328.5	23.5	66.3	0.2	0.50
3,357.0	0.19	263.86	3,353.5	23.6	66.2	0.2	0.96
3,382.0	0.21	265.59	3,378.5	23.6	66.1	0.1	0.08
3,407.0	0.24	269.75	3,403.5	23.6	66.0	0.1	0.14
3,432.0	0.18	278.99	3,428.5	23.6	65.9	0.0	0.27
3,457.0	0.38	28.11	3,453.5	23.7	65.9	0.0	1.88
3,482.0	1.48	44.49	3,478.5	24.0	66.2	-0.2	2.48
3,507.0	2.74	43.03	3,503.5	24.6	66.8	-0.2	3.48
3,532.0	3.74	42.10	3,528.4	25.7	67.8	-0.2	4.01
3,557.0	4.72	42.66	3,553.3	27.0	69.0	-2.2	3.92
3,582.0	5.76	43.06	3,578.2	28.7	70.6	-3.2	4.16
3,607.0	6.53	45.73	3,603.1	30.6	72.4	-4.4	3.28
3,632.0	7.26	50.01	3,627.9	32.6	74.7	-5.5	3.57
3,657.0	7.98	53.12	3,652.7	34.7	77.3	-6.6	3.32

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 WV Department of
 Environmental Protection



EOW Completion Report



Company:	Antero	Local Co-ordinate Reference:	Well Scardina Unit 3H
Project:	Tyler County WV	TVD Reference:	Precision 523: GL 814' + KB 19' @ 833.0usft
Site:	Weigle East Pad: Dean/Goodfellow/Hawkeye/Scardina	MD Reference:	Precision 523: GL 814' + KB 19' @ 833.0usft
Well:	Scardina Unit 3H	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)
3,682.0	8.54	58.48	3,677.4	36.7	80.2	-7.5	3.81
3,707.0	9.04	61.88	3,702.1	38.6	83.5	-8.2	2.88
3,732.0	9.29	61.74	3,726.8	40.5	87.1	-8.7	1.00
3,757.0	9.50	59.79	3,751.5	42.5	90.6	-9.4	1.53
3,782.0	9.21	53.10	3,776.2	44.7	94.0	-10.4	4.50
3,807.0	9.27	51.90	3,800.8	47.1	97.2	-11.6	0.81
3,832.0	9.34	52.43	3,825.5	49.6	100.4	-12.9	0.44
3,857.0	9.64	55.57	3,850.2	52.0	103.7	-14.0	2.39
3,882.0	10.04	58.70	3,874.8	54.4	107.3	-15.0	2.67
3,907.0	10.43	58.44	3,899.4	56.7	111.1	-15.9	1.57
3,932.0	10.79	57.35	3,924.0	59.1	115.0	-16.9	1.65
3,957.0	11.47	55.24	3,948.5	61.8	119.0	-18.1	3.17
3,982.0	12.22	51.68	3,973.0	64.9	123.1	-19.5	4.19
4,007.0	12.91	48.70	3,997.4	68.3	127.3	-21.4	3.79
4,032.0	13.71	46.66	4,021.7	72.2	131.5	-23.6	3.71
4,057.0	14.62	45.46	4,045.9	76.5	135.9	-26.1	3.82
4,082.0	15.70	44.41	4,070.1	81.1	140.6	-28.9	4.46
4,107.0	16.56	44.05	4,094.1	86.1	145.4	-32.0	3.46
4,132.0	17.37	45.30	4,118.0	91.3	150.5	-35.1	3.55
4,157.0	17.86	48.43	4,141.8	96.4	156.1	-38.2	4.27
4,182.0	17.86	50.84	4,165.6	101.4	161.9	-40.9	2.96
4,207.0	17.93	54.47	4,189.4	106.1	168.0	-43.2	4.47
4,232.0	18.61	55.46	4,213.1	110.6	174.4	-45.3	2.99
4,257.0	19.59	55.93	4,236.8	115.2	181.2	-47.3	3.97
4,282.0	20.59	56.15	4,260.2	120.0	188.3	-49.4	4.01
4,307.0	22.10	56.30	4,283.5	125.0	195.9	-51.6	6.04
4,332.0	23.26	56.72	4,306.6	130.3	203.9	-53.9	4.68
4,357.0	24.31	57.07	4,329.5	135.8	212.4	-56.3	4.24
4,382.0	25.47	57.34	4,352.2	141.5	221.2	-58.6	4.66
4,407.0	26.50	58.24	4,374.6	147.4	230.5	-61.0	4.41
4,432.0	27.58	58.82	4,396.9	153.3	240.2	-63.3	4.45
4,457.0	28.94	60.11	4,418.9	159.3	250.4	-65.6	5.96
4,482.0	29.44	62.26	4,440.7	165.2	261.0	-67.9	4.65
4,507.0	29.33	65.10	4,462.5	170.6	272.0	-68.9	5.59
4,532.0	29.43	68.18	4,484.3	175.5	283.9	-69.7	6.06
4,557.0	28.97	72.32	4,506.1	179.6	294.8	-69.7	8.28
4,582.0	28.60	74.98	4,528.0	183.0	306.3	-69.0	5.33
4,607.0	28.92	75.40	4,550.0	186.1	317.9	-68.2	2.60
4,632.0	28.32	74.88	4,571.9	189.2	329.5	-66.9	3.64
4,657.0	27.78	73.32	4,594.0	192.4	340.8	-66.2	1.52
4,682.0	27.49	72.79	4,616.1	195.7	351.9	-65.6	2.29
4,707.0	26.98	72.22	4,638.3	199.2	362.8	-65.2	1.42
4,732.0	26.67	71.84	4,660.7	202.7	373.6	-64.8	1.78
4,757.0	26.29	71.32	4,683.0	206.2	384.1	-64.6	

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Company: Antero	Local Co-ordinate Reference: Well Scardina Unit 3H
Project: Tyler County WV	TVD Reference: Precision 523' GL 814' + KB 19' @ 833.0usft
Site: Weigle East Pad: Dean/Goodfellow/Hawkeye/Sc	MD Reference: Precision 523' GL 814' + KB 19' @ 833.0usft
Well: Scardina Unit 3H	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)
4,782.0	26.10	70.59	4,705.5	209.8	394.6	-64.4	1.50
4,807.0	26.31	70.42	4,727.9	213.5	405.0	-64.4	0.89
4,832.0	25.88	69.24	4,750.4	217.3	415.3	-64.5	2.70
4,857.0	25.19	68.62	4,772.9	221.1	425.3	-64.7	2.96
4,882.0	25.64	68.20	4,795.5	225.1	435.3	-65.1	1.94
4,907.0	26.03	68.45	4,818.0	229.1	445.4	-65.5	1.62
4,932.0	25.92	68.10	4,840.5	233.2	455.6	-65.8	0.75
4,957.0	26.04	67.22	4,862.9	237.3	465.7	-66.3	1.61
4,982.0	26.58	66.40	4,885.3	241.7	475.9	-67.0	2.60
5,007.0	26.61	65.71	4,907.7	246.2	486.2	-67.8	1.24
5,032.0	26.25	64.77	4,930.1	250.9	496.3	-68.8	2.21
5,057.0	26.21	64.20	4,952.5	255.7	506.2	-69.9	1.02
5,082.0	25.96	63.53	4,975.0	260.5	516.1	-71.2	1.55
5,107.0	25.76	62.70	4,997.5	265.4	525.8	-72.5	1.65
5,132.0	25.93	62.07	5,020.0	270.5	535.5	-74.0	1.29
5,157.0	26.27	61.74	5,042.4	275.7	545.2	-75.6	1.48
5,182.0	26.42	61.33	5,064.8	280.9	554.9	-77.3	0.94
5,207.0	26.63	61.27	5,087.2	286.3	564.7	-79.1	0.85
5,232.0	26.64	61.51	5,109.5	291.7	574.6	-80.8	0.43
5,257.0	27.19	62.61	5,131.8	297.0	584.6	-82.4	2.97
5,282.0	27.16	62.79	5,154.1	302.2	594.7	-83.9	0.35
5,307.0	27.03	62.58	5,176.3	307.4	604.8	-85.4	0.65
5,332.0	26.68	61.89	5,198.6	312.7	614.8	-87.0	1.87
5,357.0	26.19	61.47	5,221.0	318.0	624.6	-88.7	2.10
5,382.0	25.86	61.06	5,243.5	323.2	634.2	-90.4	1.50
5,407.0	25.55	61.03	5,266.0	328.5	643.7	-92.1	1.24
5,432.0	25.90	62.40	5,288.5	333.6	653.3	-93.8	2.76
5,457.0	26.15	64.06	5,311.0	338.6	663.1	-95.1	3.08
5,482.0	26.27	64.55	5,333.4	343.4	673.0	-96.3	0.99
5,507.0	26.26	64.67	5,355.8	348.1	683.0	-97.4	0.22
5,532.0	26.12	64.40	5,378.3	352.9	693.0	-98.5	0.74
5,557.0	25.82	63.69	5,400.8	357.6	702.8	-99.7	1.73
5,582.0	25.51	63.01	5,423.3	362.5	712.5	-101.0	1.71
5,607.0	25.22	62.19	5,445.9	367.4	722.0	-102.4	1.82
5,632.0	25.03	62.23	5,468.5	372.4	731.4	-103.9	0.76
5,657.0	25.02	63.24	5,491.2	377.2	740.8	-105.3	1.35
5,682.0	25.12	64.00	5,513.8	381.9	750.3	-106.5	1.35
5,707.0	24.76	64.32	5,536.5	386.5	759.8	-107.7	1.54
5,732.0	25.18	64.67	5,559.1	391.1	769.3	-108.7	1.78
5,757.0	24.67	64.43	5,581.8	395.6	778.8	-109.8	2.08
5,782.0	24.99	64.05	5,604.5	400.2	788.3	-110.9	1.43
5,807.0	25.78	63.22	5,627.1	404.9	797.9	-112.1	3.47
5,807.8	25.81	63.19	5,627.8	405.1	798.2	-112.1	4.04
5,840.0	26.26	60.44	5,656.7	411.8	810.6	-114.2	4.00

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Company:	Antero	Local Co-ordinate Reference:	Well Scardina Unit 3H
Project:	Tyler County WV	TVD Reference:	Precision 523: GL 814' + KB 19' @ 833.0usft
Site:	Weigle East Pad: Dean/Goodfellow/Hawkeye/Scardina	MD Reference:	Precision 523: GL 814' + KB 19' @ 833.0usft
Well:	Scardina Unit 3H	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)
5,870.0	25.81	60.01	5,683.7	418.3	822.1	-116.5	1.63
5,900.0	25.56	58.89	5,710.7	424.9	833.3	-119.0	1.82
5,930.0	25.09	58.38	5,737.8	431.6	844.2	-121.6	1.73
5,960.0	24.78	57.90	5,765.1	438.3	855.0	-124.2	1.23
5,990.0	24.36	56.57	5,792.3	445.0	865.5	-127.0	2.31
6,020.0	25.50	56.65	5,819.5	452.0	876.0	-130.0	3.80
6,050.0	26.29	57.11	5,846.5	459.1	887.0	-133.1	2.72
6,080.0	26.10	60.60	5,873.4	466.0	898.3	-135.7	5.17
6,109.0	26.15	69.22	5,899.5	471.4	909.9	-136.9	13.08
6,139.0	25.91	79.78	5,926.5	474.9	922.5	-135.9	15.45
6,169.0	25.82	88.96	5,953.5	476.2	935.5	-132.8	13.34
6,194.0	26.24	95.93	5,975.9	475.7	946.4	-128.6	12.35
SCMR							
6,199.0	26.36	97.30	5,980.4	475.4	948.6	-127.6	12.35
6,229.0	27.91	103.64	6,007.1	472.9	962.1	-120.8	10.93
6,259.0	30.29	107.86	6,033.3	469.0	976.1	-112.3	10.47
6,288.0	32.57	114.63	6,058.1	463.5	990.1	-102.4	14.48
6,318.0	34.70	119.03	6,083.1	455.9	1,005.0	-90.3	10.79
6,348.0	36.82	121.74	6,107.4	447.1	1,020.1	-76.8	8.82
6,378.0	38.96	125.95	6,131.1	436.8	1,035.4	-62.0	11.18
6,406.0	41.85	130.24	6,152.4	425.6	1,049.6	-46.7	14.32
MDLX							
6,408.0	42.06	130.53	6,153.9	424.7	1,050.6	-45.5	14.32
6,438.0	44.90	133.08	6,175.7	411.0	1,066.0	-27.4	11.13
6,467.0	47.34	134.76	6,195.8	396.5	1,081.1	-8.6	9.39
6,497.0	49.95	136.50	6,215.6	380.4	1,096.8	11.8	9.73
6,527.0	52.99	138.54	6,234.3	363.0	1,112.6	33.5	11.44
6,550.0	55.57	139.29	6,247.7	349.0	1,124.9	50.9	11.51
BRKT							
6,557.0	56.35	139.51	6,251.6	344.6	1,128.7	56.3	11.51
6,587.0	59.26	141.40	6,267.6	325.0	1,144.8	80.2	11.07
6,604.0	60.83	142.41	6,276.1	313.4	1,153.9	94.1	10.55
TLLY							
6,617.0	62.03	143.16	6,282.3	304.3	1,160.4	105.0	10.55
6,647.0	63.81	145.85	6,296.0	282.6	1,176.3	139.7	9.95
6,677.0	66.75	148.64	6,308.5	259.6	1,191.1	157.3	12.94
6,707.0	70.17	151.05	6,319.5	235.5	1,205.1	184.7	13.63
6,714.0	71.03	151.53	6,321.9	229.7	1,208.2	194.2	13.91
MRCL_HOT							
6,736.0	73.72	153.00	6,328.5	211.2	1,218.4	212.0	13.81
6,766.0	76.56	154.57	6,336.2	185.2	1,230.8	240.8	10.73
6,796.0	79.47	156.89	6,342.4	158.4	1,242.9	270.0	12.30
6,818.0	82.48	158.17	6,345.9	138.3	1,251.2	291.7	14.84
6,826.0	83.62	158.52	6,346.9	131.0	1,254.1	299.7	14.90
6,856.0	87.98	159.37	6,349.1	103.0	1,264.8	329.6	14.81

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Site: Weigle East Pad: Dean/Goodfellow/Hawkeye/Scardina	MD Reference: Precision 523 GL 814' + KB 19' @ 833 0usft
Well: Scardina Unit 3H	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	89.46	159.64	6,349.5	83.4	1,272.2	350.6	7.16
6,907.0	89.77	159.37	6,349.7	55.3	1,282.7	380.6	1.37
6,997.0	91.01	158.82	6,349.1	-28.8	1,314.8	470.5	1.51
7,086.0	89.77	158.40	6,348.5	-111.7	1,347.3	559.5	1.47
7,176.0	90.30	158.87	6,348.5	-195.5	1,380.1	649.5	0.79
7,265.0	89.06	158.83	6,349.0	-278.5	1,412.2	738.4	1.39
7,355.0	88.25	160.07	6,351.1	-362.7	1,443.7	828.4	1.65
7,444.0	89.97	160.98	6,352.5	-446.6	1,473.4	917.4	2.19
7,534.0	90.60	161.99	6,352.0	-532.0	1,502.0	1,007.4	1.32
7,623.0	89.83	160.37	6,351.7	-616.2	1,530.7	1,096.3	2.02
7,713.0	90.13	159.58	6,351.7	-700.8	1,561.5	1,186.3	0.94
7,802.0	89.60	161.67	6,351.9	-784.7	1,591.0	1,275.3	2.42
7,892.0	90.00	159.88	6,352.2	-869.7	1,620.7	1,365.3	2.04
7,982.0	88.53	159.59	6,353.4	-954.1	1,651.8	1,455.3	1.66
8,071.0	88.72	159.75	6,355.5	-1,037.5	1,682.8	1,544.3	0.28
8,161.0	88.76	159.91	6,357.5	-1,122.0	1,713.8	1,634.3	0.18
8,250.0	89.20	159.37	6,359.1	-1,205.4	1,744.7	1,723.2	0.78
8,340.0	89.36	160.35	6,360.2	-1,289.9	1,775.7	1,813.2	1.10
8,429.0	89.50	161.22	6,361.1	-1,374.0	1,805.0	1,902.2	0.99
8,519.0	89.23	161.20	6,362.1	-1,459.1	1,834.0	1,992.2	0.30
8,608.0	88.53	159.27	6,363.8	-1,542.9	1,864.1	2,081.2	2.31
8,698.0	88.53	159.29	6,366.1	-1,627.0	1,895.9	2,171.1	0.02
8,788.0	88.86	159.49	6,368.2	-1,711.3	1,927.6	2,261.1	0.43
8,877.0	87.89	160.28	6,370.7	-1,794.8	1,958.2	2,350.1	1.41
8,966.0	87.25	159.00	6,374.5	-1,878.2	1,989.1	2,439.0	1.61
9,056.0	87.11	159.57	6,378.9	-1,962.2	2,020.9	2,528.8	0.65
9,146.0	90.57	161.34	6,380.7	-2,047.0	2,051.0	2,618.8	4.32
9,235.0	90.07	161.35	6,380.2	-2,131.3	2,079.5	2,707.8	0.56
9,325.0	89.53	161.32	6,380.6	-2,216.6	2,108.3	2,797.8	0.60
9,415.0	89.53	160.93	6,381.3	-2,301.8	2,137.4	2,887.8	0.43
9,504.0	90.40	163.17	6,381.3	-2,386.4	2,164.8	2,977.8	2.70
9,594.0	88.83	158.58	6,382.0	-2,471.4	2,194.3	3,067.8	5.39
9,684.0	89.53	160.53	6,383.2	-2,555.7	2,225.7	3,156.7	2.30
9,773.0	89.13	160.14	6,384.3	-2,639.5	2,255.7	3,245.9	0.63
9,863.0	90.30	160.31	6,384.7	-2,724.2	2,286.1	3,335.7	1.31
9,952.0	89.77	158.70	6,384.7	-2,807.6	2,317.3	3,424.6	1.90
10,042.0	88.89	157.82	6,385.7	-2,891.2	2,350.6	3,513.6	2.50
10,131.0	89.63	159.92	6,386.9	-2,974.2	2,382.7	3,602.6	3.19
10,221.0	89.93	159.84	6,387.2	-3,058.7	2,413.7	3,693.5	0.34
10,311.0	89.76	162.05	6,387.5	-3,143.8	2,443.1	3,783.5	2.46
10,400.0	89.63	159.36	6,387.9	-3,227.8	2,472.5	3,872.5	3.03
10,490.0	91.34	160.77	6,387.2	-3,312.4	2,503.1	3,962.5	2.46
10,579.0	91.04	159.32	6,385.3	-3,396.0	2,533.5	4,051.5	1.66
10,669.0	90.20	159.71	6,384.4	-3,480.3	2,565.0	4,141.5	1.03

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10,758.0	89.53	162.00	6,384.6	-3,564.4	2,594.2	4,230.4	2.68
10,848.0	89.34	161.95	6,385.5	-3,649.9	2,622.0	4,320.4	0.22
10,937.0	89.63	162.26	6,386.3	-3,734.6	2,649.4	4,409.4	0.48
11,027.0	89.73	162.74	6,386.8	-3,820.5	2,676.4	4,499.3	0.54
11,116.0	90.13	161.62	6,386.9	-3,905.2	2,703.7	4,588.2	1.34
11,206.0	89.06	158.48	6,387.5	-3,989.8	2,734.4	4,678.2	3.69
11,295.0	89.16	158.59	6,388.9	-4,072.6	2,766.9	4,767.2	0.17
11,385.0	89.03	159.17	6,390.3	-4,156.5	2,799.4	4,857.1	0.66
11,475.0	88.72	161.25	6,392.1	-4,241.2	2,829.8	4,947.1	2.34
11,564.0	89.70	161.73	6,393.3	-4,325.6	2,858.1	5,036.1	1.23
11,654.0	89.00	160.51	6,394.3	-4,410.7	2,887.2	5,126.1	1.56
11,743.0	89.46	160.89	6,395.5	-4,494.7	2,916.6	5,215.1	0.67
11,833.0	89.50	161.16	6,396.3	-4,579.8	2,945.9	5,305.0	0.30
11,923.0	89.03	159.93	6,397.5	-4,664.7	2,975.9	5,395.0	1.46
12,012.0	89.43	160.21	6,398.7	-4,748.4	3,006.2	5,484.0	0.55
12,102.0	89.36	160.40	6,399.6	-4,833.1	3,036.5	5,574.0	0.22
12,191.0	89.40	160.99	6,400.6	-4,917.1	3,065.9	5,663.0	0.66
12,281.0	89.36	159.13	6,401.6	-5,001.7	3,096.6	5,753.0	2.07
12,370.0	89.66	159.49	6,402.3	-5,084.9	3,128.1	5,842.0	0.53
12,460.0	89.87	159.22	6,402.7	-5,169.1	3,159.8	5,932.0	0.38
12,550.0	88.79	159.07	6,403.8	-5,253.2	3,191.8	6,021.9	1.21
12,639.0	88.69	158.63	6,405.7	-5,336.2	3,223.9	6,110.9	0.51
12,729.0	89.33	160.02	6,407.3	-5,420.4	3,255.7	6,200.9	1.70
12,819.0	89.00	159.78	6,408.6	-5,504.9	3,286.6	6,290.9	0.45
12,908.0	89.33	161.29	6,409.9	-5,588.8	3,316.3	6,379.8	1.74
12,998.0	89.23	160.70	6,411.0	-5,673.9	3,345.6	6,469.8	0.66
13,087.0	88.93	159.59	6,412.4	-5,757.6	3,375.8	6,558.8	1.29
13,177.0	88.96	160.79	6,414.1	-5,842.3	3,406.3	6,648.8	1.33
13,266.0	88.25	158.95	6,416.3	-5,925.8	3,436.9	6,737.8	2.22
13,356.0	89.29	160.28	6,418.2	-6,010.1	3,468.3	6,827.7	1.88
13,446.0	90.00	162.78	6,418.7	-6,095.5	3,496.8	6,917.7	2.89
13,535.0	89.36	160.84	6,419.2	-6,180.0	3,524.6	7,006.7	2.30
13,625.0	89.87	162.02	6,419.8	-6,265.4	3,553.2	7,096.6	1.43
13,714.0	89.63	160.20	6,420.2	-6,349.6	3,582.0	7,185.6	2.06
13,804.0	89.43	160.16	6,421.0	-6,434.2	3,612.6	7,275.6	0.23
13,893.0	88.83	159.13	6,422.3	-6,517.7	3,643.5	7,364.6	1.34
13,983.0	90.20	161.23	6,423.1	-6,602.3	3,674.0	7,454.6	2.79
14,072.0	90.91	161.04	6,422.2	-6,686.5	3,702.8	7,543.6	0.83
14,162.0	89.43	159.38	6,422.0	-6,771.2	3,733.3	7,633.6	2.47
14,251.0	89.90	158.95	6,422.5	-6,854.4	3,764.9	7,722.6	0.72
14,341.0	89.70	158.32	6,422.8	-6,938.2	3,797.7	7,812.5	0.73
14,431.0	90.54	159.25	6,422.6	-7,022.1	3,830.3	7,902.5	1.39
14,520.0	90.37	159.04	6,421.9	-7,105.3	3,862.0	7,991.5	0.30
14,610.0	91.17	159.97	6,420.7	-7,189.6	3,893.5	8,081.4	1.36



Company: Antero	Local Co-ordinate Reference: Well Scardina Unit 3H
Project: Tyler County WV	TVD Reference: Precision 523 GL 814' + KB 19' @ 833.0usft
Site: Weigle East Pad: Dean/Goodfellow/Hawkeye/Sc	MD Reference: Precision 523 GL 814' + KB 19' @ 833.0usft
Well: Scardina Unit 3H	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)
14,699.0	91.04	161.14	6,419.0	-7,273.5	3,923.1	8,170.4	1.32
14,789.0	90.67	161.75	6,417.6	-7,358.8	3,951.7	8,260.4	0.79
14,878.0	89.40	161.75	6,417.6	-7,443.3	3,979.6	8,349.4	1.43
14,968.0	90.91	162.12	6,417.3	-7,528.9	4,007.5	8,439.3	1.73
15,057.0	90.91	160.05	6,415.9	-7,613.0	4,036.4	8,528.3	2.33
15,147.0	91.45	160.19	6,414.1	-7,697.7	4,067.0	8,618.3	0.62
15,236.0	91.11	159.70	6,412.1	-7,781.2	4,097.5	8,707.3	0.67
15,326.0	90.70	160.54	6,410.7	-7,865.9	4,128.1	8,797.2	1.04
15,416.0	90.24	159.64	6,409.9	-7,950.5	4,158.7	8,887.2	1.12
15,505.0	89.83	161.37	6,409.9	-8,034.4	4,188.4	8,976.2	2.00
15,594.0	90.30	161.29	6,409.8	-8,118.7	4,216.9	9,065.2	0.54
15,684.0	89.63	160.82	6,409.8	-8,203.8	4,246.1	9,155.2	0.91
15,774.0	90.00	159.94	6,410.1	-8,288.6	4,276.3	9,245.2	1.06
15,863.0	90.07	160.29	6,410.1	-8,372.3	4,306.6	9,334.2	0.40
15,953.0	91.14	160.34	6,409.1	-8,457.0	4,336.9	9,424.2	1.19
16,042.0	90.97	159.39	6,407.5	-8,540.6	4,367.6	9,513.2	1.08
16,132.0	91.23	160.02	6,405.7	-8,625.0	4,398.8	9,603.2	0.76
16,221.0	89.66	158.78	6,405.0	-8,708.3	4,430.1	9,692.1	2.25
16,311.0	89.13	159.84	6,406.0	-8,792.5	4,461.9	9,782.1	1.32
16,401.0	88.96	158.58	6,407.5	-8,876.6	4,493.8	9,872.1	1.41
16,490.0	88.79	160.06	6,409.2	-8,959.8	4,525.2	9,961.1	1.67
16,579.0	89.10	160.34	6,410.9	-9,043.5	4,555.4	10,050.0	0.47
16,669.0	88.93	159.94	6,412.4	-9,128.2	4,586.0	10,140.0	0.48
16,758.0	88.89	159.41	6,414.1	-9,211.6	4,616.9	10,229.0	0.60
16,848.0	89.06	159.31	6,415.7	-9,295.8	4,648.6	10,319.0	0.22
16,937.0	89.63	159.97	6,416.7	-9,379.3	4,679.5	10,408.0	0.98
16,991.0	89.96	159.31	6,416.9	-9,429.9	4,698.3	10,462.0	1.37
17,050.0	89.96	159.31	6,417.0	-9,485.1	4,719.2	10,521.0	0.00

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
6,194.0	5,975.9	475.7	946.4	SCMR
6,406.0	6,152.4	425.6	1,049.6	MDLX
6,550.0	6,247.7	349.0	1,124.9	BRKT
6,604.0	6,276.1	313.4	1,153.9	TLLY
6,714.0	6,321.9	229.7	1,208.2	MRCL_HOT

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 WV Department of
 Environmental Protection

Checked By: _____ Approved By: _____ Date: _____