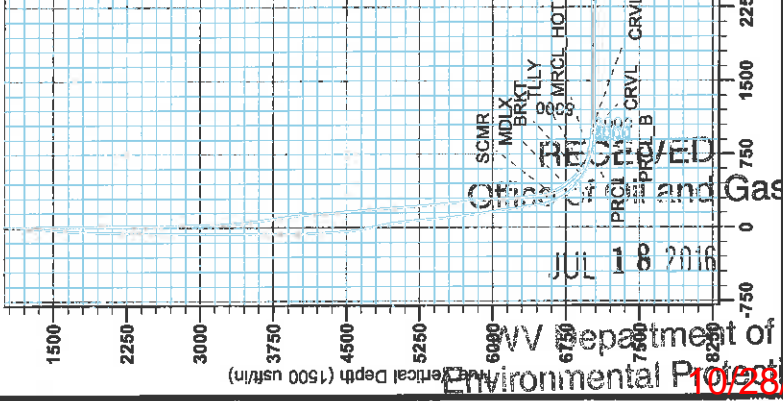




Antero
 James Gray Unit 1H
 Tyler County WV
 Northing: 14316236.53
 Easting: 1715396.50
 As Drilled ST 1



WELL DETAILS: James Gray Unit 1H
 Slot:
 4N-S +E-W Northing Easting Longitude
 0.0 0.0 14316236.53 1715396.50 39° 25' 24.545 N 80° 44' 4.194 W

PROJECT DETAILS: Tyler County WV
 Geoid: System: Universal Transverse Mercator (US Survey Feet)
 Ellipsoid: Clarke 1866
 Zone: Zone 17N (84 W to 78 W)
 System Datum: Mean Sea Level

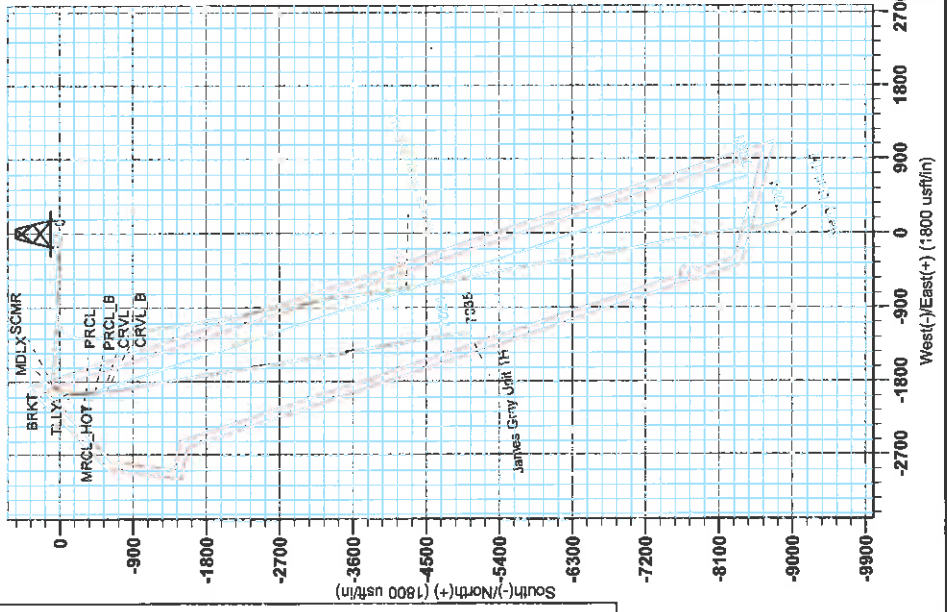
REFERENCE INFORMATION
 Coordinates (NED) Reference: Well: James Gray Unit 1H, Old North
 Station: (1983) Reference: Slot: 10 (N/A, 0.00) @ 1102.00m
 Measurement Method: Maximum Correlation

LEGEND
 James Gray Unit 1H, Original Wellpath, As Drilled VO
 Berry Unit 1H, Original Wellpath, As Drilled VO
 James Gray Unit 1H, Original Wellpath, Plot 4 VO
 James Gray Unit 1H, ST 1, ST1, ST1 Plot 2 VO
 As Drilled ST 1

DESIGN TARGET DETAILS

Name	+N-S	+E-W	TVD	Exeiting	Latitude	Longitude
SHL James Gray Unit 1H	0.0	0.0	0.0	14316236.53	38° 25' 24.545 N	80° 44' 4.194 W
Actual SHL James Gray Unit 1H	-5068.0	-488.3	1431167.53	1714898.19	38° 24' 34.441 N	80° 44' 10.765 W
Actual SHL James Gray Unit 1H	-4280.8	40.6	14311945.93	1719437.14	38° 24' 42.121 N	80° 44' 3.807 W

To convert Magnetic North to Grid, Subtract 8.71°
 To convert True North to Grid, Subtract 0.17°
 Magnetic North: -8.71°
 Magnetic Field
 Strength: 52241.68nT
 Dip Angle: 66.81°
 Date: 1/23/2015
 Model: BGM2014





Antero

**Tyler County WV
Coastal 1 Pad: Berry/Gray/Owo
James Gray Unit 1H
ST 1**

Design: As Drilled ST 1

EOW Completion Report

06 February, 2015



WV Department of
Environmental Protection
10/28/2016



Company:	Antero	Local Co-ordinate Reference:	Well James Gray Unit 1H
Project:	Tyler County WV	TVD Reference:	Precision 522: GL 1164' + KB 18' @ 1182.0usft
Site:	Coastal 1 Pad: Berry/Gray/Owo	MD Reference:	Precision 522: GL 1164' + KB 18' @ 1182.0usft
Well:	James Gray Unit 1H	North Reference:	Grid
Wellbore:	ST 1	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled ST 1	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	Coastal 1 Pad: Berry/Gray/Owo				
Site Position:		Northing:	14,316,233.70 usft	Latitude:	39° 25' 24.517 N
From:	Map	Easting:	1,715,406.00 usft	Longitude:	80° 44' 4.043 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.17 °

Well	James Gray Unit 1H					
Well Position	+N/-S	0.0 usft	Northing:	14,316,236.53 usft	Latitude:	39° 25' 24.545 N
	+E/-W	0.0 usft	Easting:	1,715,396.50 usft	Longitude:	80° 44' 4.164 W
Position Uncertainty		2.0 usft	Wellhead Elevation:	1,182.0 usft	Ground Level:	1,164.0 usft

Wellbore	ST 1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	1/23/2015	-8.54	66.91	52,242

Design	As Drilled ST 1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	6,819.0
Vertical Section:		Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
		0.0	0.0	0.0	193.42

Survey Program	Date 2/6/2015				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
30.0	6,753.0	Survey #5 Def Gyro to KOP (Original Well)	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper	
6,819.0	6,819.0	Survey MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1	
6,851.0	12,420.0	Survey #1 ST1 (ST 1)	MWD SDI	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
	30.0	0.07	193.37	30.0	0.0	0.0	0.0	0.23
	55.0	0.14	193.37	55.0	-0.1	0.0	0.1	0.28
	80.0	0.21	193.37	80.0	-0.1	0.0	0.1	0.28
	105.0	0.29	192.45	105.0	-0.2	-0.1	0.2	0.32
	130.0	0.34	188.48	130.0	-0.4	-0.1	0.4	0.22
	155.0	0.30	179.93	155.0	-0.5	-0.1	0.5	0.25
	180.0	0.29	170.54	180.0	-0.6	-0.1	0.6	0.20
	205.0	0.29	170.10	205.0	-0.8	0.0	0.9	0.01
	230.0	0.29	168.52	230.0	-0.9	0.0	0.9	0.03

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Company:	Antero	Local Co-ordinate Reference:	Well James Gray Unit 1H
Project:	Tyler County WV	TVD Reference:	Precision 522: GL 1164' + KB 18' @ 1182.0usft
Site:	Coastal 1 Pad: Berry/Gray/Owo	MD Reference:	Precision 522: GL 1164' + KB 18' @ 1182.0usft
Well:	James Gray Unit 1H	North Reference:	Grid
Wellbore:	ST 1	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled ST 1	Database:	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
255.0	0.28	172.21	255.0	-1.0	0.0	1.0	0.08
280.0	0.25	169.93	280.0	-1.1	0.0	1.1	0.13
305.0	0.26	168.97	305.0	-1.2	0.0	1.2	0.04
330.0	0.27	169.09	330.0	-1.4	0.0	1.3	0.04
355.0	0.27	170.19	355.0	-1.5	0.1	1.4	0.02
380.0	0.28	171.20	380.0	-1.6	0.1	1.5	0.04
405.0	0.30	172.58	405.0	-1.7	0.1	1.6	0.08
430.0	0.32	178.38	430.0	-1.8	0.1	1.8	0.15
455.0	0.33	181.55	455.0	-2.0	0.1	1.9	0.08
480.0	0.34	182.51	480.0	-2.1	0.1	2.1	0.05
505.0	0.33	181.14	505.0	-2.3	0.1	2.2	0.05
530.0	0.34	185.85	530.0	-2.4	0.1	2.3	0.12
555.0	0.32	193.14	555.0	-2.6	0.1	2.5	0.19
580.0	0.31	194.61	580.0	-2.7	0.0	2.6	0.05
605.0	0.35	197.03	605.0	-2.8	0.0	2.8	0.17
630.0	0.36	191.17	630.0	-3.0	0.0	2.9	0.15
655.0	0.40	185.38	655.0	-3.2	-0.1	3.1	0.22
680.0	0.36	185.73	680.0	-3.3	-0.1	3.2	0.16
705.0	0.35	186.01	705.0	-3.5	-0.1	3.4	0.04
730.0	0.34	188.41	730.0	-3.6	-0.1	3.6	0.07
755.0	0.37	186.28	755.0	-3.8	-0.1	3.7	0.13
780.0	0.37	184.72	780.0	-3.9	-0.1	3.9	0.04
805.0	0.36	185.58	805.0	-4.1	-0.2	4.0	0.05
830.0	0.35	184.14	830.0	-4.3	-0.2	4.2	0.05
855.0	0.38	190.82	855.0	-4.4	-0.2	4.3	0.21
880.0	0.38	189.18	880.0	-4.6	-0.2	4.5	0.04
905.0	0.38	183.74	905.0	-4.7	-0.2	4.7	0.14
930.0	0.40	190.24	930.0	-4.9	-0.3	4.8	0.19
955.0	0.39	195.91	955.0	-5.1	-0.3	5.0	0.16
980.0	0.39	191.07	980.0	-5.2	-0.3	5.2	0.13
1,005.0	0.40	190.35	1,005.0	-5.4	-0.4	5.3	0.04
1,030.0	0.38	192.62	1,030.0	-5.6	-0.4	5.5	0.10
1,055.0	0.42	198.02	1,055.0	-5.7	-0.5	5.7	0.22
1,080.0	0.37	196.21	1,080.0	-5.9	-0.5	5.9	0.21
1,105.0	0.29	194.18	1,105.0	-6.0	-0.5	6.0	0.32
1,130.0	0.33	200.28	1,130.0	-6.2	-0.6	6.1	0.21
1,155.0	0.32	199.33	1,155.0	-6.3	-0.6	6.3	0.05
1,180.0	0.26	199.40	1,180.0	-6.4	-0.7	6.4	0.24
1,205.0	0.27	191.21	1,205.0	-6.5	-0.7	6.5	0.16
1,230.0	0.26	185.22	1,230.0	-6.7	-0.7	6.6	0.12
1,255.0	0.23	174.16	1,255.0	-6.8	-0.7	6.7	0.22
1,280.0	0.21	175.61	1,280.0	-6.9	-0.7	6.8	0.08
1,305.0	0.28	182.32	1,305.0	-7.0	-0.7	6.9	0.30
1,330.0	0.36	181.73	1,330.0	-7.1	-0.7	7.1	0.32
1,355.0	0.43	187.69	1,355.0	-7.3	-0.7	7.3	0.32

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Company:	Antero	Local Co-ordinate Reference:	Well James Gray Unit 1H
Project:	Tyler County WV	TVD Reference:	Precision 522: GL 1164' + KB 18' @ 1182.0usft
Site:	Coastal 1 Pad: Berry/Gray/Owo	MD Reference:	Precision 522: GL 1164' + KB 18' @ 1182.0usft
Well:	James Gray Unit 1H	North Reference:	Grid
Wellbore:	ST 1	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled ST 1	Database:	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
1,380.0	0.37	186.32	1,380.0	-7.4	-0.8	7.4	0.24
1,405.0	0.39	197.09	1,405.0	-7.6	-0.8	7.6	0.30
1,430.0	0.39	201.65	1,430.0	-7.8	-0.8	7.8	0.12
1,455.0	0.37	200.11	1,455.0	-7.9	-0.9	7.9	0.09
1,480.0	0.24	190.48	1,480.0	-8.0	-0.9	8.0	0.56
1,505.0	0.20	172.21	1,505.0	-8.1	-0.9	8.1	0.32
1,530.0	0.35	182.10	1,530.0	-8.3	-0.9	8.3	0.63
1,555.0	0.39	188.45	1,555.0	-8.4	-1.0	8.4	0.23
1,580.0	0.39	189.54	1,580.0	-8.6	-1.0	8.6	0.03
1,605.0	0.41	187.92	1,605.0	-8.8	-1.0	8.8	0.09
1,630.0	0.50	199.51	1,630.0	-9.0	-1.1	9.0	0.51
1,655.0	0.46	203.11	1,655.0	-9.2	-1.1	9.2	0.20
1,680.0	0.45	204.35	1,680.0	-9.3	-1.2	9.4	0.06
1,705.0	0.45	207.51	1,705.0	-9.5	-1.3	9.6	0.10
1,730.0	0.36	210.69	1,730.0	-9.7	-1.4	9.7	0.37
1,755.0	0.26	198.86	1,755.0	-9.8	-1.4	9.9	0.47
1,780.0	0.30	194.41	1,780.0	-9.9	-1.5	10.0	0.18
1,805.0	0.41	193.78	1,805.0	-10.1	-1.5	10.1	0.44
1,830.0	0.48	199.65	1,830.0	-10.2	-1.6	10.3	0.33
1,855.0	0.42	202.14	1,855.0	-10.4	-1.6	10.5	0.25
1,880.0	0.41	197.56	1,880.0	-10.6	-1.7	10.7	0.14
1,905.0	0.56	202.07	1,905.0	-10.8	-1.8	10.9	0.62
1,930.0	0.49	203.44	1,930.0	-11.0	-1.9	11.1	0.28
1,955.0	0.38	205.82	1,955.0	-11.2	-1.9	11.3	0.45
1,980.0	0.40	213.11	1,980.0	-11.3	-2.0	11.5	0.21
2,005.0	0.40	217.59	2,005.0	-11.5	-2.1	11.6	0.13
2,030.0	0.28	227.24	2,030.0	-11.6	-2.2	11.8	0.53
2,055.0	0.31	216.19	2,055.0	-11.7	-2.3	11.9	0.26
2,080.0	0.40	218.91	2,080.0	-11.8	-2.4	12.0	0.37
2,105.0	0.44	218.69	2,105.0	-11.9	-2.5	12.2	0.16
2,130.0	0.41	222.68	2,130.0	-12.1	-2.6	12.4	0.17
2,155.0	0.44	233.69	2,155.0	-12.2	-2.8	12.5	0.35
2,180.0	0.45	235.18	2,180.0	-12.3	-2.9	12.7	0.06
2,205.0	0.41	227.21	2,205.0	-12.4	-3.1	12.8	0.29
2,230.0	0.40	223.45	2,230.0	-12.6	-3.2	13.0	0.11
2,255.0	0.38	217.69	2,255.0	-12.7	-3.3	13.1	0.18
2,280.0	0.48	224.80	2,280.0	-12.8	-3.4	13.3	0.45
2,305.0	0.51	228.08	2,305.0	-13.0	-3.6	13.5	0.17
2,330.0	0.45	228.14	2,330.0	-13.1	-3.8	13.6	0.24
2,355.0	0.46	234.65	2,355.0	-13.2	-3.9	13.8	0.21
2,380.0	0.54	232.50	2,380.0	-13.4	-4.1	13.9	0.33
2,405.0	0.41	224.65	2,405.0	-13.5	-4.2	14.1	0.58
2,430.0	0.29	242.61	2,430.0	-13.6	-4.4	14.2	0.64
2,455.0	0.31	239.76	2,455.0	-13.7	-4.5	14.2	0.10

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Company:	Antero	Local Co-ordinate Reference:	Well James Gray Unit 1H
Project:	Tyler County WV	TVD Reference:	Precision 522: GL 1164' + KB 18' @ 1182.0usft
Site:	Coastal 1 Pad: Berry/Gray/Owo	MD Reference:	Precision 522: GL 1164' + KB 18' @ 1182.0usft
Well:	James Gray Unit 1H	North Reference:	Grid
Wellbore:	ST 1	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled ST 1	Database:	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
2,480.0	0.41	235.40	2,480.0	-13.7	-4.6	14.4	0.41
2,505.0	0.49	238.96	2,504.9	-13.8	-4.8	14.6	0.34
2,530.0	0.54	240.13	2,529.9	-14.0	-5.0	14.7	0.20
2,555.0	0.49	236.56	2,554.9	-14.1	-5.2	14.9	0.24
2,580.0	1.18	257.86	2,579.9	-14.2	-5.5	15.1	2.98
2,605.0	2.32	264.69	2,604.9	-14.3	-6.3	15.4	4.63
2,630.0	3.61	268.04	2,629.9	-14.4	-7.5	15.7	5.20
2,655.0	4.61	272.57	2,654.8	-14.3	-9.3	16.1	4.20
2,680.0	5.44	275.41	2,679.7	-14.2	-11.5	16.5	3.46
2,705.0	6.20	276.73	2,704.6	-13.9	-14.0	16.8	3.09
2,730.0	7.00	277.60	2,729.4	-13.6	-16.9	17.1	3.22
2,755.0	7.51	277.95	2,754.2	-13.1	-20.0	17.4	2.05
2,780.0	7.94	277.70	2,779.0	-12.7	-23.3	17.7	1.73
2,805.0	8.02	277.73	2,803.8	-12.2	-26.8	18.1	0.32
2,830.0	8.20	275.32	2,828.5	-11.8	-30.3	18.5	1.54
2,855.0	8.76	274.52	2,853.3	-11.5	-34.0	19.1	2.29
2,880.0	9.29	274.21	2,877.9	-11.2	-37.9	19.7	2.13
2,905.0	10.03	274.77	2,902.6	-10.9	-42.1	20.3	2.98
2,930.0	10.60	276.18	2,927.2	-10.4	-46.5	20.9	2.49
2,955.0	11.02	276.71	2,951.7	-9.9	-51.2	21.5	1.73
2,980.0	11.75	277.69	2,976.2	-9.3	-56.1	22.1	3.02
3,005.0	12.62	278.55	3,000.7	-8.5	-61.3	22.5	3.55
3,030.0	13.38	279.50	3,025.0	-7.7	-66.8	23.0	3.16
3,055.0	14.22	280.09	3,049.3	-6.6	-72.7	23.3	3.41
3,080.0	14.94	280.74	3,073.5	-5.5	-78.9	23.7	2.95
3,105.0	15.82	281.03	3,097.6	-4.3	-85.4	24.0	3.53
3,130.0	17.04	281.34	3,121.6	-2.9	-92.4	24.2	4.89
3,155.0	17.88	281.01	3,145.4	-1.4	-99.7	24.5	3.38
3,180.0	18.66	279.65	3,169.2	0.0	-107.4	25.0	3.56
3,205.0	19.48	276.77	3,192.8	1.1	-115.5	25.7	4.99
3,230.0	20.39	274.81	3,216.3	2.0	-124.0	26.8	4.52
3,255.0	21.11	273.65	3,239.7	2.6	-132.8	28.3	3.32
3,280.0	22.10	272.99	3,262.9	3.2	-142.0	29.9	4.08
3,305.0	22.66	272.93	3,286.1	3.7	-151.5	31.6	2.24
3,330.0	23.25	272.94	3,309.1	4.2	-161.3	33.4	2.36
3,355.0	23.98	273.19	3,332.0	4.7	-171.3	35.2	2.95
3,380.0	24.92	273.00	3,354.7	5.3	-181.6	37.0	3.77
3,405.0	25.52	272.78	3,377.4	5.8	-192.2	39.0	2.43
3,430.0	26.05	272.72	3,399.9	6.3	-203.1	41.0	2.12
3,455.0	26.50	272.36	3,422.3	6.8	-214.1	43.1	1.91
3,480.0	26.77	272.25	3,444.6	7.3	-225.3	45.2	1.10
3,505.0	26.82	271.78	3,466.9	7.7	-236.6	47.5	0.87
3,530.0	26.38	270.48	3,489.3	7.9	-247.8	49.8	2.92
3,555.0	26.21	269.66	3,511.7	7.9	-258.9	52.4	1.60

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Project:	Tyler County WV	TVD Reference:	Precision 522: GL 1164' + KB 18' @ 1182.0usft
Site:	Coastal 1 Pad: Berry/Gray/Owo	MD Reference:	Precision 522: GL 1164' + KB 18' @ 1182.0usft
Well:	James Gray Unit 1H	North Reference:	Grid
Wellbore:	ST 1	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled ST 1	Database:	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (%/100usft)
3,580.0	26.38	269.23	3,534.1	7.8	-269.9	55.1	1.02
3,605.0	26.31	269.14	3,556.5	7.6	-281.0	57.8	0.32
3,630.0	26.21	268.15	3,579.0	7.4	-292.1	60.6	1.80
3,655.0	26.16	267.75	3,601.4	7.0	-303.1	63.6	0.73
3,680.0	26.25	267.64	3,623.8	6.5	-314.2	66.6	0.41
3,705.0	26.39	267.44	3,646.2	6.0	-325.2	69.6	0.66
3,730.0	26.49	267.31	3,668.6	5.5	-336.3	72.7	0.46
3,755.0	26.25	266.64	3,691.0	5.0	-347.4	75.8	1.53
3,780.0	26.34	266.58	3,713.4	4.3	-358.5	79.0	0.38
3,805.0	26.83	266.52	3,735.8	3.6	-369.7	82.3	1.96
3,830.0	27.40	266.28	3,758.0	2.9	-381.0	85.6	2.32
3,855.0	27.66	266.34	3,780.2	2.2	-392.6	89.0	1.05
3,880.0	27.69	266.34	3,802.3	1.4	-404.1	92.4	0.12
3,905.0	27.68	266.40	3,824.5	0.7	-415.7	95.8	0.12
3,930.0	27.58	266.57	3,846.6	0.0	-427.3	99.2	0.51
3,955.0	27.59	266.92	3,868.8	-0.7	-438.9	102.5	0.65
3,980.0	27.29	267.83	3,891.0	-1.2	-450.4	105.7	2.06
4,005.0	27.00	269.06	3,913.2	-1.5	-461.8	108.6	2.53
4,030.0	26.57	269.71	3,935.5	-1.6	-473.0	111.4	2.08
4,055.0	26.61	269.87	3,957.9	-1.7	-484.2	114.0	0.33
4,080.0	26.79	270.32	3,980.2	-1.7	-495.5	116.6	1.08
4,105.0	26.71	271.57	4,002.5	-1.5	-506.7	119.0	2.27
4,130.0	26.83	272.58	4,024.9	-1.1	-518.0	121.2	1.88
4,155.0	26.96	273.21	4,047.2	-0.5	-529.3	123.3	1.25
4,180.0	27.17	273.52	4,069.4	0.2	-540.6	125.3	1.01
4,205.0	27.14	273.64	4,091.7	0.9	-552.0	127.2	0.25
4,230.0	27.24	273.80	4,113.9	1.6	-563.4	129.2	0.50
4,255.0	27.22	274.01	4,136.1	2.4	-574.8	131.1	0.39
4,280.0	27.09	274.49	4,158.4	3.3	-586.2	132.9	1.02
4,305.0	27.35	274.75	4,180.6	4.2	-597.6	134.6	1.14
4,330.0	27.20	275.20	4,202.8	5.2	-609.0	136.3	1.02
4,355.0	27.16	275.47	4,225.1	6.2	-620.4	137.9	0.52
4,380.0	27.17	275.63	4,247.3	7.3	-631.7	139.5	0.29
4,405.0	27.09	275.57	4,269.6	8.4	-643.1	141.0	0.34
4,430.0	27.04	275.44	4,291.8	9.5	-654.4	142.6	0.31
4,455.0	27.17	275.39	4,314.1	10.6	-665.7	144.2	0.53
4,480.0	27.23	275.37	4,336.3	11.7	-677.1	145.8	0.24
4,505.0	26.90	274.53	4,358.6	12.7	-688.5	147.5	2.02
4,530.0	26.61	273.94	4,380.9	13.5	-699.7	149.3	1.57
4,555.0	26.54	273.77	4,403.3	14.2	-710.8	151.1	0.41
4,580.0	26.63	273.71	4,425.6	15.0	-722.0	153.0	0.38
4,605.0	26.31	273.26	4,448.0	15.7	-733.1	154.8	1.51
4,630.0	26.35	273.26	4,470.4	16.3	-744.2	156.9	0.16
4,655.0	26.47	273.27	4,492.8	16.9	-755.3	158.8	0.48

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Company:	Antero	Local Co-ordinate Reference:	Well James Gray Unit 1H
Project:	Tyler County WV	TVD Reference:	Precision 522: GL 1164' + KB 18' @ 1182.0usft
Site:	Coastal 1 Pad: Berry/Gray/Owo	MD Reference:	Precision 522: GL 1164' + KB 18' @ 1182.0usft
Well:	James Gray Unit 1H	North Reference:	Grid
Wellbore:	ST 1	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled ST 1	Database:	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
4,680.0	26.29	273.57	4,515.2	17.6	-766.4	160.8	0.90
4,705.0	25.40	273.01	4,537.7	18.2	-777.3	162.7	3.69
4,730.0	25.03	272.69	4,560.3	18.7	-787.9	164.6	1.58
4,755.0	25.20	272.54	4,582.9	19.2	-798.5	166.6	0.73
4,780.0	25.16	272.11	4,605.6	19.7	-809.1	168.7	0.75
4,805.0	24.19	271.39	4,628.3	20.0	-819.6	170.8	4.06
4,830.0	24.29	271.39	4,651.1	20.2	-829.8	172.9	0.40
4,855.0	24.33	271.72	4,673.9	20.5	-840.1	175.0	0.57
4,880.0	24.35	271.94	4,696.6	20.8	-850.4	177.1	0.37
4,905.0	24.71	272.34	4,719.4	21.2	-860.8	179.1	1.59
4,930.0	24.97	272.40	4,742.1	21.7	-871.3	181.1	1.04
4,955.0	24.94	272.96	4,764.7	22.1	-881.8	183.1	0.95
4,980.0	25.42	273.77	4,787.4	22.8	-892.4	185.0	2.36
5,005.0	26.20	274.52	4,809.9	23.6	-903.3	186.7	3.38
5,030.0	27.12	275.74	4,832.2	24.6	-914.5	188.3	4.28
5,055.0	27.68	276.27	4,854.4	25.8	-925.9	189.8	2.44
5,080.0	27.93	276.53	4,876.5	27.1	-937.5	191.2	1.11
5,105.0	27.91	276.77	4,898.6	28.4	-949.1	192.6	0.46
5,130.0	27.98	276.95	4,920.7	29.8	-960.7	194.0	0.44
5,155.0	28.47	277.13	4,942.7	31.3	-972.5	195.3	1.99
5,180.0	28.33	277.12	4,964.7	32.7	-984.3	196.6	0.56
5,205.0	28.32	276.93	4,986.7	34.2	-996.1	197.9	0.36
5,230.0	28.03	276.63	5,008.8	35.6	-1,007.8	199.3	1.29
5,255.0	28.46	276.40	5,030.8	36.9	-1,019.5	200.7	1.77
5,280.0	28.55	276.14	5,052.8	38.2	-1,031.4	202.2	0.61
5,305.0	28.45	276.00	5,074.7	39.5	-1,043.3	203.7	0.48
5,330.0	27.79	275.37	5,096.8	40.7	-1,055.0	205.3	2.89
5,355.0	27.07	274.64	5,119.0	41.7	-1,066.4	207.0	3.18
5,380.0	26.76	274.09	5,141.3	42.5	-1,077.7	208.7	1.59
5,405.0	26.84	274.08	5,163.6	43.3	-1,089.0	210.6	0.32
5,430.0	26.97	273.94	5,185.9	44.1	-1,100.3	212.4	0.58
5,455.0	27.01	274.02	5,208.1	44.9	-1,111.6	214.3	0.22
5,480.0	27.34	274.22	5,230.4	45.7	-1,123.0	216.1	1.37
5,505.0	27.78	274.36	5,252.5	46.6	-1,134.5	218.0	1.78
5,530.0	27.89	274.40	5,274.7	47.5	-1,146.1	219.8	0.45
5,555.0	28.26	274.39	5,296.7	48.4	-1,157.9	221.6	1.48
5,580.0	28.66	274.40	5,318.7	49.3	-1,169.7	223.5	1.60
5,605.0	28.87	274.30	5,340.6	50.2	-1,181.7	225.4	0.86
5,630.0	28.92	274.06	5,362.5	51.1	-1,193.8	227.3	0.51
5,655.0	28.38	273.30	5,384.4	51.9	-1,205.8	229.4	2.61
5,680.0	27.59	272.60	5,406.5	52.5	-1,217.5	231.5	3.42
5,705.0	26.94	272.31	5,428.7	53.0	-1,228.9	233.7	2.65
5,730.0	27.00	272.24	5,451.0	53.4	-1,240.2	235.9	0.27
5,755.0	27.12	272.44	5,473.3	53.9	-1,251.6	238.1	0.60

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Company:	Antero	Local Co-ordinate Reference:	Well James Gray Unit 1H
Project:	Tyler County WV	TVD Reference:	Precision 522: GL 1164' + KB 18' @ 1182.0usft
Site:	Coastal 1 Pad: Berry/Gray/Owo	MD Reference:	Precision 522: GL 1164' + KB 18' @ 1182.0usft
Well:	James Gray Unit 1H	North Reference:	Grid
Wellbore:	ST 1	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled ST 1	Database:	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
5,780.0	27.06	272.74	5,495.5	54.4	-1,263.0	240.2	0.60
5,805.0	27.28	272.93	5,517.8	55.0	-1,274.4	242.3	0.95
5,830.0	27.73	273.04	5,539.9	55.6	-1,285.9	244.4	1.81
5,855.0	28.20	273.14	5,562.0	56.2	-1,297.6	246.5	1.89
5,880.0	28.42	273.11	5,584.0	56.8	-1,309.5	248.6	0.88
5,905.0	28.48	273.15	5,606.0	57.5	-1,321.3	250.7	0.25
5,930.0	28.56	273.05	5,628.0	58.1	-1,333.3	252.9	0.37
5,955.0	28.48	272.84	5,650.0	58.7	-1,345.2	255.0	0.51
5,980.0	28.45	272.88	5,671.9	59.3	-1,357.1	257.2	0.14
6,005.0	28.88	272.54	5,693.9	59.9	-1,369.1	259.5	1.84
6,030.0	28.59	272.50	5,715.8	60.4	-1,381.1	261.7	1.16
6,055.0	27.97	272.41	5,737.8	60.9	-1,392.9	264.0	2.49
6,080.0	28.68	272.40	5,759.8	61.4	-1,404.8	266.2	2.84
6,105.0	28.75	272.29	5,781.7	61.9	-1,416.8	268.6	0.35
6,130.0	27.65	272.14	5,803.8	62.4	-1,428.6	270.8	4.41
6,155.0	27.86	272.43	5,825.9	62.9	-1,440.2	273.1	1.00
6,180.0	27.81	273.23	5,848.0	63.4	-1,451.9	275.2	1.51
6,205.0	27.74	273.79	5,870.1	64.1	-1,463.5	277.2	1.08
6,230.0	27.40	274.27	5,892.3	65.0	-1,475.0	279.1	1.62
6,255.0	27.01	274.41	5,914.5	65.8	-1,486.4	280.9	1.58
6,280.0	27.37	274.45	5,936.7	66.7	-1,497.8	282.7	1.44
6,305.0	26.69	274.80	5,959.0	67.6	-1,509.1	284.5	2.79
6,330.0	26.94	275.07	5,981.3	68.6	-1,520.4	286.1	1.11
6,355.0	27.28	275.61	6,003.6	69.6	-1,531.7	287.7	1.68
6,380.0	27.13	275.99	6,025.8	70.8	-1,543.1	289.2	0.92
6,405.0	27.19	276.13	6,048.1	72.0	-1,554.4	290.7	0.35
6,430.0	27.24	276.20	6,070.3	73.2	-1,565.8	292.1	0.24
6,455.0	27.23	276.28	6,092.5	74.5	-1,577.2	293.6	0.15
6,480.0	27.32	276.30	6,114.7	75.7	-1,588.6	295.0	0.36
6,505.0	27.92	276.49	6,136.9	77.0	-1,600.1	296.4	2.43
6,530.0	27.64	276.47	6,159.0	78.3	-1,611.7	297.8	1.12
6,555.0	27.96	276.42	6,181.1	79.7	-1,623.2	299.2	1.28
6,580.0	27.93	276.78	6,203.2	81.0	-1,634.9	300.6	0.69
6,605.0	27.92	276.48	6,225.3	82.3	-1,646.5	302.0	0.56
6,630.0	27.94	276.42	6,247.4	83.7	-1,658.1	303.4	0.14
6,655.0	27.70	275.88	6,269.5	84.9	-1,669.7	304.9	1.39
6,680.0	27.98	275.51	6,291.6	86.1	-1,681.4	306.5	1.32
6,705.0	28.18	274.95	6,313.7	87.1	-1,693.1	308.2	1.32
6,730.0	27.44	274.49	6,335.8	88.1	-1,704.7	309.9	3.08
6,752.9	27.39	274.19	6,356.1	88.9	-1,715.2	311.6	0.64
6,819.0	27.36	271.40	6,414.8	90.4	-1,745.6	317.2	1.94
6,851.0	25.81	272.99	6,443.4	90.9	-1,759.9	320.6	5.33
6,881.0	25.49	280.28	6,470.5	92.4	-1,785.7	322.4	10.57
6,912.0	24.58	279.04	6,498.6	94.6	-1,785.7	322.4	3.39

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Company:	Antero	Local Co-ordinate Reference:	Well James Gray Unit 1H
Project:	Tyler County WV	TVD Reference:	Precision 522: GL 1164' + KB 18' @ 1182.0usft
Site:	Coastal 1 Pad: Berry/Gray/Owo	MD Reference:	Precision 522: GL 1164' + KB 18' @ 1182.0usft
Well:	James Gray Unit 1H	North Reference:	Grid
Wellbore:	ST 1	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled ST 1	Database:	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
6,943.0	24.01	269.90	6,526.8	95.6	-1,798.4	324.3	12.26
6,974.0	24.31	259.97	6,555.1	94.5	-1,811.0	328.4	13.13
7,005.0	25.42	253.93	6,583.2	91.6	-1,823.6	334.2	8.94
7,033.0	25.64	244.79	6,608.5	87.3	-1,834.9	340.9	14.07
SCMR							
7,035.0	25.68	244.15	6,610.3	86.9	-1,835.7	341.5	14.07
7,066.0	26.45	236.63	6,638.2	80.2	-1,847.5	350.7	10.94
7,097.0	28.15	231.73	6,665.7	71.9	-1,859.0	361.5	9.09
7,128.0	29.81	226.05	6,692.9	62.0	-1,870.3	373.7	10.36
7,159.0	31.50	220.74	6,719.5	50.5	-1,881.1	387.4	10.29
7,190.0	33.22	216.24	6,745.7	37.5	-1,891.4	402.5	9.54
7,215.0	35.60	212.80	6,766.3	25.9	-1,899.4	415.6	12.30
MDLX							
7,221.0	36.19	212.04	6,771.2	22.9	-1,901.3	419.0	12.30
7,252.0	38.59	206.80	6,795.8	6.5	-1,910.5	437.1	12.85
7,282.0	41.39	203.98	6,818.8	-10.9	-1,918.8	455.9	11.12
7,313.0	44.99	201.57	6,841.4	-30.5	-1,927.0	476.8	12.77
7,344.0	47.92	197.92	6,862.8	-51.6	-1,934.6	499.2	12.73
7,375.0	50.96	194.39	6,882.9	-74.2	-1,941.1	522.7	13.07
7,401.0	53.67	191.59	6,898.8	-94.3	-1,945.7	543.2	13.47
BRKT							
7,406.0	54.20	191.07	6,901.8	-98.2	-1,946.5	547.3	13.47
7,437.0	58.08	188.67	6,919.0	-123.6	-1,950.9	573.0	14.07
7,452.0	59.88	187.60	6,926.8	-136.3	-1,952.7	585.8	13.45
TLLY							
7,467.0	61.68	186.56	6,934.1	-149.3	-1,954.3	598.8	13.45
7,498.0	66.01	184.17	6,947.8	-177.0	-1,956.9	626.3	15.59
7,529.0	70.25	181.05	6,959.3	-205.7	-1,958.2	654.6	16.56
7,560.0	74.52	179.14	6,968.7	-235.3	-1,958.3	683.3	14.97
7,591.0	77.74	176.29	6,976.1	-265.3	-1,957.1	712.3	13.69
7,622.0	79.88	173.66	6,982.1	-295.6	-1,954.4	741.1	10.81
7,626.0	80.03	173.46	6,982.8	-299.5	-1,953.9	744.8	6.11
MRCL_HOT							
7,650.0	80.94	172.30	6,986.8	-323.0	-1,951.0	767.0	6.11
PRCL							
7,653.0	81.05	172.15	6,987.3	-326.0	-1,950.6	769.7	6.11
7,683.0	81.36	172.11	6,991.9	-355.3	-1,946.6	797.4	1.04
7,714.0	83.30	171.68	6,996.0	-385.7	-1,942.2	826.0	6.41
7,745.0	84.12	171.66	6,999.4	-416.2	-1,937.8	854.6	2.65
7,763.0	84.33	171.54	7,001.2	-433.9	-1,935.1	871.2	1.37
PRCL_B							
7,776.0	84.49	171.45	7,002.5	-446.7	-1,933.2	883.2	1.37
7,807.0	84.69	171.39	7,005.4	-477.3	-1,928.6	912.5	0.67
7,838.0	84.75	171.44	7,008.2	-507.8	-1,924.0	940.4	0.25
7,869.0	85.33	171.08	7,010.9	-538.3	-1,919.0	969.0	2.20

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Company:	Antero	Local Co-ordinate Reference:	Well James Gray Unit 1H
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Site:	Coastal 1 Pad: Berry/Gray/Owo	MD Reference:	Precision 522: GL 1164' + KB 18' @ 1182.0usft
Well:	James Gray Unit 1H	North Reference:	Grid
Wellbore:	ST 1	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled ST 1	Database:	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
7,873.0	85.32	171.08	7,011.3	-542.2	-1,918.7	972.7	0.25
CRVL							
7,899.0	85.26	171.05	7,013.4	-567.8	-1,914.7	996.7	0.25
7,905.0	85.27	171.04	7,013.9	-573.7	-1,913.7	1,002.2	0.21
CRVL_B							
7,930.0	85.30	171.00	7,015.9	-598.4	-1,909.9	1,025.3	0.21
8,030.0	88.62	171.30	7,021.2	-697.0	-1,894.5	1,117.7	3.33
8,123.0	90.37	171.91	7,022.1	-789.0	-1,880.9	1,204.0	1.99
8,215.0	90.94	172.17	7,021.0	-880.1	-1,868.2	1,289.6	0.68
8,308.0	91.04	169.54	7,019.4	-971.9	-1,853.4	1,375.5	2.83
8,400.0	90.13	168.68	7,018.5	-1,062.3	-1,836.0	1,459.3	1.36
8,495.0	89.93	167.81	7,018.4	-1,155.3	-1,816.7	1,545.3	0.94
8,590.0	89.73	169.67	7,018.7	-1,248.4	-1,798.1	1,631.6	1.97
8,685.0	90.40	169.53	7,018.6	-1,341.9	-1,781.0	1,718.5	0.72
8,779.0	89.93	171.21	7,018.3	-1,434.5	-1,765.2	1,805.0	1.86
8,873.0	89.97	170.10	7,018.4	-1,527.3	-1,750.0	1,891.7	1.18
8,968.0	89.83	169.82	7,018.6	-1,620.8	-1,733.4	1,978.9	0.33
9,062.0	89.66	171.58	7,019.0	-1,713.6	-1,718.2	2,065.6	1.88
9,156.0	90.03	171.06	7,019.2	-1,806.5	-1,704.0	2,152.7	0.68
9,251.0	90.00	170.58	7,019.2	-1,900.3	-1,688.9	2,240.4	0.51
9,345.0	88.02	172.20	7,020.8	-1,993.2	-1,674.8	2,327.5	2.72
9,439.0	88.39	172.22	7,023.8	-2,086.3	-1,662.1	2,415.1	0.39
9,531.0	90.22	173.84	7,024.9	-2,177.6	-1,650.9	2,501.3	2.66
9,624.0	89.73	172.93	7,024.9	-2,270.0	-1,640.2	2,588.7	1.11
9,716.0	90.10	172.23	7,025.1	-2,361.2	-1,628.3	2,674.6	0.86
9,809.0	89.16	170.36	7,025.7	-2,453.1	-1,614.3	2,760.8	2.25
9,901.0	89.53	170.66	7,026.7	-2,543.9	-1,599.1	2,845.5	0.52
9,994.0	89.93	168.62	7,027.2	-2,635.4	-1,582.4	2,930.6	2.24
10,086.0	88.89	169.35	7,028.1	-2,725.6	-1,564.8	3,014.4	1.38
10,179.0	88.96	169.58	7,029.9	-2,817.1	-1,547.8	3,099.4	0.26
10,272.0	88.66	169.27	7,031.8	-2,908.5	-1,530.7	3,184.3	0.46
10,364.0	90.34	172.93	7,032.6	-2,999.3	-1,516.5	3,269.4	4.38
10,457.0	90.37	173.50	7,032.0	-3,091.7	-1,505.5	3,356.7	0.61
10,549.0	89.20	170.14	7,032.4	-3,182.7	-1,492.4	3,442.2	3.87
10,642.0	90.30	173.33	7,032.8	-3,274.8	-1,479.1	3,528.6	3.63
10,735.0	89.90	173.85	7,032.6	-3,367.2	-1,468.7	3,616.1	0.71
10,827.0	90.37	171.01	7,032.4	-3,458.4	-1,456.6	3,702.0	3.13
10,920.0	90.30	167.82	7,031.8	-3,549.8	-1,439.5	3,786.9	3.43
11,012.0	90.34	166.96	7,031.3	-3,639.5	-1,419.4	3,869.6	0.94
11,105.0	89.19	166.47	7,031.7	-3,730.0	-1,398.0	3,952.7	1.34
11,198.0	89.73	168.56	7,032.6	-3,820.8	-1,377.9	4,036.3	2.32
11,290.0	89.93	168.74	7,032.9	-3,911.0	-1,357.9	4,119.5	0.29
11,383.0	89.97	170.50	7,032.9	-4,002.5	-1,343.1	4,204.9	1.89
11,476.0	89.83	171.66	7,033.1	-4,094.4	-1,328.6	4,290.9	1.26

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Company:	Antero	Local Co-ordinate Reference:	Well James Gray Unit 1H
Project:	Tyler County WV	TVD Reference:	Precision 522: GL 1164' + KB 18' @ 1182.0usft
Site:	Coastal 1 Pad: Berry/Gray/Owo	MD Reference:	Precision 522: GL 1164' + KB 18' @ 1182.0usft
Well:	James Gray Unit 1H	North Reference:	Grid
Wellbore:	ST 1	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled ST 1	Database:	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (*/100usft)
11,568.0	89.93	172.59	7,033.3	-4,185.5	-1,316.0	4,376.7	1.02
11,660.0	90.07	172.12	7,033.3	-4,276.7	-1,303.8	4,462.5	0.53
11,753.0	89.77	171.48	7,033.4	-4,368.8	-1,290.5	4,549.0	0.76
11,846.0	89.87	170.86	7,033.7	-4,460.6	-1,276.2	4,635.0	0.68
11,938.0	89.19	170.98	7,034.5	-4,551.5	-1,261.7	4,720.0	0.75
12,031.0	89.70	172.29	7,035.4	-4,643.5	-1,248.2	4,806.4	1.51
12,124.0	89.87	171.59	7,035.7	-4,735.6	-1,235.2	4,892.9	0.77
12,216.0	89.97	173.75	7,035.8	-4,826.8	-1,223.4	4,979.0	2.35
12,309.0	90.20	174.04	7,035.7	-4,919.3	-1,213.5	5,066.6	0.40
12,363.0	90.64	172.64	7,035.3	-4,972.9	-1,207.3	5,117.3	2.72
12,420.0	90.64	172.64	7,034.7	-5,029.4	-1,200.0	5,170.6	0.00

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,033.0	6,608.5	87.3	-1,834.9	SCMR
7,215.0	6,766.3	25.9	-1,899.4	MDLX
7,401.0	6,898.8	-94.3	-1,945.7	BRKT
7,452.0	6,926.8	-136.3	-1,952.7	TLLY
7,626.0	6,982.8	-299.5	-1,953.9	MRCL_HOT
7,650.0	6,986.8	-323.0	-1,951.0	PRCL
7,763.0	7,001.2	-433.9	-1,935.1	PRCL_B
7,873.0	7,011.3	-542.2	-1,918.7	CRVL
7,905.0	7,013.9	-573.7	-1,913.7	CRVL_B

Checked By: _____	Approved By: _____	Date: _____
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