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APR 21 2016

WV GEOLOGICAL SURVEY
MORGANTOWN, WV



Antero
Yoho Unit 2H
Doddridge County WV
Northing: 14292563.29
Easting: 1708440.97
As Drilled

WELL DETAILS: Yoho Unit 2H
Ground Level: 1135.0
Northing: 14292563.29
Easting: 1708440.97
Longitude: 80° 45' 33.636" W
Latitude: 39° 21' 30.671" N

REFERENCE INFORMATION
Coordinates: NAD 83
Datum: NAD 83
Projection: UTM
Zone: 17N
Datum: Mean Sea Level



Genie Lightfoot
14:37, February 11 2015
Scientific Drilling
11220 N.W. 10th Street
Yukon, OK 73089

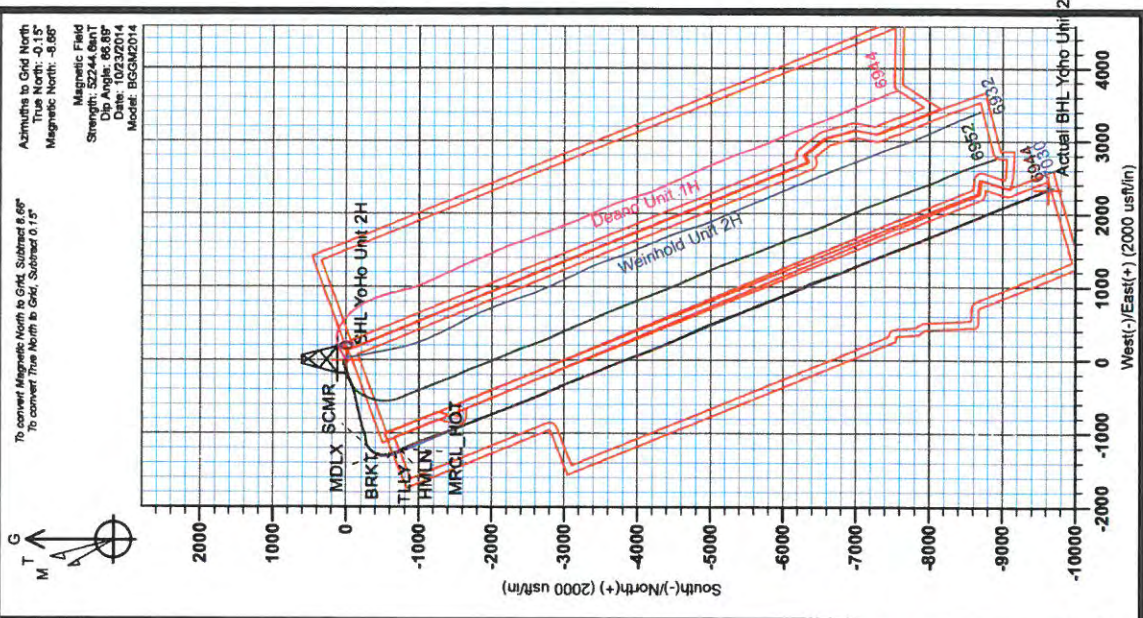
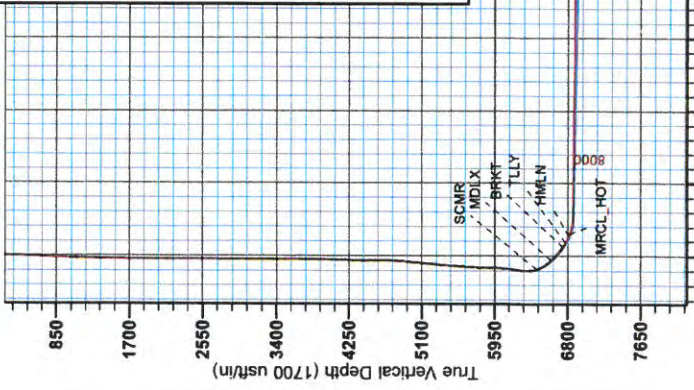
PROJECT DETAILS: Doddridge County WV
Geoidetic System: Universal Transverse Mercator (US Survey Feet)
Datum: NAD 1983 (NAD83 CONUS)
Ellipsoid: Clarke 1866
Zone: Zone 17N (64 W to 76 W)
System Datum: Mean Sea Level

LEGEND

- ✕ Weinhold Unit 1H, Original Wellpath, As Drilled V0
- Weinhold Unit 2H, Original Wellpath, As Drilled V0
- △ Deano Unit 1H, Original Wellpath, As Drilled V0
- Yoho Unit 2H, Original Wellpath, Plan 7 V0
- As Drilled

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL Yoho Unit 2H	0.0	0.0	0.0	14292563.29	1708440.97	39° 21' 30.671" N	80° 45' 33.636" W
Actual BHL Yoho Unit 2H	-9622.7	-9622.7	2338.5	14282840.59	1710779.47	39° 19' 55.464" N	80° 45' 4.191" W





Antero
Doddridge County WV
Melody Pad
Yoho Unit 2H
Original Wellpath

Design: As Drilled

EOW Completion Report

11 February, 2015

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WV GEOLOGICAL SURVEY
MORGANTOWN, WV



Company: Antero	Local Co-ordinate Reference: Well Yoho Unit 2H
Project: Doddridge County WV	TVD Reference: Precision 525: GL 1135' + KB 19' @ 1154.0usft
Site: Melody Pad	MD Reference: Precision 525: GL 1135' + KB 19' @ 1154.0usft
Well: Yoho Unit 2H	North Reference: Grid
Wellbore: Original Wellpath	Survey Calculation Method: Minimum Curvature
Design: As Drilled	Database: Oklahoma District

Project	Doddridge County WV, McClellan District		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Zone 17N (84 W to 78 W)		

Site	Melody Pad				
Site Position:		Northing:	14,292,537.54 usft	Latitude:	39° 21' 30.416 N
From:	Map	Easting:	1,708,455.40 usft	Longitude:	80° 45' 33.453 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.15 °

Well	Yoho Unit 2H, Marcellus					
Well Position	+N/-S	0.0 usft	Northing:	14,292,563.29 usft	Latitude:	39° 21' 30.671 N
	+E/-W	0.0 usft	Easting:	1,708,440.97 usft	Longitude:	80° 45' 33.636 W
Position Uncertainty		2.0 usft	Wellhead Elevation:	1,154.0 usft	Ground Level:	1,135.0 usft

Wellbore	Original Wellpath				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	10/23/2014	-8.51	66.89	52,245

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	158.01

Survey Program	Date 2/11/2015				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
25.0	6,368.0	Survey #7 Final Gyro KOP (Original Wellp	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4	
6,460.0	16,880.0	Survey #8 MWD Surveys (Original Wellpa	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	0.0	0.00	
25.0	0.33	124.07	25.0	0.0	0.1	0.1	0.1	1.32	
50.0	0.58	122.42	50.0	-0.1	0.2	0.2	0.2	1.00	
75.0	0.42	107.78	75.0	-0.2	0.4	0.4	0.4	0.81	
100.0	0.65	122.53	100.0	-0.3	0.6	0.6	0.6	1.07	
125.0	0.77	123.78	125.0	-0.5	0.9	0.8	0.8	0.48	
150.0	1.04	123.36	150.0	-0.7	1.2	1.1	1.1	1.08	
175.0	1.07	125.77	175.0	-1.0	1.6	1.5	1.5	0.21	
200.0	1.11	125.76	200.0	-1.3	2.0	1.9	1.9	0.16	
225.0	0.85	134.26	225.0	-1.5	2.3	2.3	2.3	1.19	
250.0	0.75	148.45	250.0	-1.8	2.5	2.6	2.6	0.88	

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Local Co-ordinate Reference: Well Yoho Unit 2H
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MD Reference: Precision 525: GL 1135' + KB 19' @ 1154.0usft
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)
275.0	0.46	167.06	275.0	-2.1	2.6	2.9	1.39
300.0	0.40	204.32	300.0	-2.2	2.6	3.0	1.12
325.0	0.63	238.89	325.0	-2.4	2.5	3.1	1.51
350.0	0.83	250.47	350.0	-2.5	2.2	3.1	0.99
375.0	1.24	262.23	375.0	-2.6	1.7	3.1	1.84
400.0	1.56	269.08	400.0	-2.7	1.1	2.9	1.44
425.0	1.94	271.12	424.9	-2.6	0.4	2.6	1.54
450.0	2.41	273.00	449.9	-2.6	-0.6	2.2	1.90
475.0	2.70	272.80	474.9	-2.6	-1.7	1.7	1.16
500.0	3.34	274.22	499.9	-2.5	-3.0	1.2	2.58
525.0	3.64	274.03	524.8	-2.4	-4.5	0.5	1.20
550.0	4.57	272.50	549.8	-2.3	-6.3	-0.3	3.75
575.0	4.96	273.21	574.7	-2.2	-8.4	-1.1	1.58
600.0	5.42	273.35	599.6	-2.0	-10.6	-2.1	1.84
625.0	5.58	273.70	624.5	-1.9	-13.0	-3.1	0.65
650.0	5.74	274.49	649.3	-1.7	-15.5	-4.2	0.71
675.0	5.97	275.85	674.2	-1.5	-18.0	-5.4	1.07
700.0	6.07	277.14	699.1	-1.2	-20.6	-6.6	0.67
725.0	6.04	278.37	723.9	-0.8	-23.2	-7.9	0.53
750.0	6.13	279.70	748.8	-0.4	-25.9	-9.3	0.67
775.0	5.86	279.66	773.6	0.0	-28.4	-10.7	1.08
800.0	5.83	280.00	798.5	0.5	-30.9	-12.0	0.18
825.0	5.58	280.42	823.4	0.9	-33.4	-13.3	1.01
850.0	5.03	282.89	848.3	1.4	-35.7	-14.6	2.38
875.0	4.23	287.05	873.2	1.9	-37.6	-15.8	3.47
900.0	4.01	286.49	898.1	2.4	-39.3	-17.0	0.89
925.0	4.01	284.86	923.1	2.9	-41.0	-18.0	0.46
950.0	3.73	284.79	948.0	3.3	-42.6	-19.0	1.12
975.0	3.76	285.37	973.0	3.7	-44.2	-20.0	0.19
1,000.0	3.42	285.23	997.9	4.1	-45.7	-21.0	1.36
1,025.0	3.31	286.17	1,022.9	4.5	-47.1	-21.9	0.49
1,050.0	3.22	285.29	1,047.8	4.9	-48.5	-22.7	0.41
1,075.0	3.15	286.33	1,072.8	5.3	-49.8	-23.6	0.36
1,100.0	2.81	285.95	1,097.8	5.7	-51.1	-24.4	1.36
1,125.0	2.53	284.55	1,122.7	6.0	-52.2	-25.1	1.15
1,150.0	2.52	284.20	1,147.7	6.2	-53.3	-25.7	0.07
1,175.0	2.45	285.53	1,172.7	6.5	-54.3	-26.4	0.36
1,200.0	2.64	285.85	1,197.7	6.8	-55.4	-27.1	0.76
1,225.0	2.21	284.29	1,222.6	7.1	-56.4	-27.7	1.74
1,250.0	2.24	283.61	1,247.6	7.3	-57.4	-28.3	0.16
1,275.0	1.96	285.32	1,272.6	7.6	-58.3	-28.8	1.15
1,300.0	2.00	284.88	1,297.6	7.8	-59.1	-29.3	0.17
1,325.0	1.86	284.09	1,322.6	8.0	-59.9	-29.8	0.57
1,350.0	1.79	283.32	1,347.6	8.2	-60.7	-30.3	0.30



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North Reference: Grid
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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)
1,375.0	1.70	281.93	1,372.6	8.4	-61.4	-30.7	0.40
1,400.0	1.64	284.53	1,397.5	8.5	-62.1	-31.2	0.39
1,425.0	1.70	282.93	1,422.5	8.7	-62.8	-31.6	0.30
1,450.0	1.53	278.73	1,447.5	8.8	-63.5	-32.0	0.83
1,475.0	1.46	278.25	1,472.5	8.9	-64.2	-32.3	0.28
1,500.0	1.35	276.92	1,497.5	9.0	-64.8	-32.6	0.46
1,525.0	1.31	274.67	1,522.5	9.1	-65.4	-32.9	0.26
1,550.0	1.33	276.43	1,547.5	9.1	-65.9	-33.1	0.18
1,575.0	1.24	275.37	1,572.5	9.2	-66.5	-33.4	0.37
1,600.0	1.19	277.12	1,597.5	9.2	-67.0	-33.7	0.25
1,625.0	0.99	272.56	1,622.5	9.3	-67.5	-33.9	0.87
1,650.0	1.02	272.02	1,647.5	9.3	-67.9	-34.1	0.13
1,675.0	0.98	272.24	1,672.5	9.3	-68.4	-34.2	0.16
1,700.0	0.87	270.94	1,697.5	9.3	-68.8	-34.4	0.45
1,725.0	0.68	269.67	1,722.5	9.3	-69.1	-34.5	0.76
1,750.0	0.69	266.74	1,747.5	9.3	-69.4	-34.6	0.15
1,775.0	0.63	267.75	1,772.5	9.3	-69.7	-34.7	0.24
1,800.0	0.66	267.34	1,797.5	9.3	-70.0	-34.8	0.12
1,825.0	0.67	270.01	1,822.5	9.3	-70.3	-34.9	0.13
1,850.0	0.56	263.57	1,847.5	9.3	-70.5	-35.0	0.52
1,875.0	0.50	251.88	1,872.5	9.2	-70.8	-35.0	0.49
1,900.0	0.57	257.10	1,897.5	9.2	-71.0	-35.1	0.34
1,925.0	0.65	259.22	1,922.5	9.1	-71.2	-35.1	0.33
1,950.0	0.54	255.12	1,947.5	9.0	-71.5	-35.2	0.47
1,975.0	0.57	262.46	1,972.4	9.0	-71.7	-35.2	0.31
2,000.0	0.54	253.58	1,997.4	9.0	-72.0	-35.2	0.36
2,025.0	0.53	253.20	2,022.4	8.9	-72.2	-35.3	0.04
2,050.0	0.53	255.81	2,047.4	8.8	-72.4	-35.3	0.10
2,075.0	0.47	257.79	2,072.4	8.8	-72.6	-35.3	0.25
2,100.0	0.43	258.19	2,097.4	8.7	-72.8	-35.4	0.16
2,125.0	0.47	272.11	2,122.4	8.7	-73.0	-35.4	0.46
2,150.0	0.46	241.23	2,147.4	8.7	-73.2	-35.5	0.99
2,175.0	0.32	246.49	2,172.4	8.6	-73.4	-35.4	0.58
2,200.0	0.35	253.54	2,197.4	8.5	-73.5	-35.4	0.20
2,225.0	0.32	243.75	2,222.4	8.5	-73.6	-35.4	0.26
2,250.0	0.44	245.64	2,247.4	8.4	-73.8	-35.4	0.48
2,275.0	0.34	250.10	2,272.4	8.4	-73.9	-35.4	0.42
2,300.0	0.31	232.67	2,297.4	8.3	-74.1	-35.4	0.41
2,325.0	0.31	243.49	2,322.4	8.2	-74.2	-35.4	0.23
2,350.0	0.37	258.05	2,347.4	8.2	-74.3	-35.4	0.42
2,375.0	0.29	267.72	2,372.4	8.2	-74.5	-35.4	0.39
2,400.0	0.39	270.22	2,397.4	8.2	-74.6	-35.5	0.40
2,425.0	0.42	286.96	2,422.4	8.2	-74.8	-35.6	0.49
2,450.0	0.39	262.39	2,447.4	8.2	-74.9	-35.7	0.70
2,475.0	0.41	273.89	2,472.4	8.2	-75.1	-35.7	0.33



Company: Antero
Project: Doddridge County WV
Site: Melody Pad
Well: Yoho Unit 2H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Yoho Unit 2H
TVD Reference: Precision 525: GL 1135' + KB 19' @ 1154.0usft
MD Reference: Precision 525: GL 1135' + KB 19' @ 1154.0usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	EW (usft)	V. Sec (usft)	DLeg (*/100usft)
2,500.0	0.41	278.23	2,497.4	8.2	-75.3	-35.8	0.12
2,525.0	0.39	283.59	2,522.4	8.2	-75.5	-35.9	0.17
2,550.0	0.41	283.07	2,547.4	8.3	-75.6	-36.0	0.08
2,575.0	0.39	285.06	2,572.4	8.3	-75.8	-36.1	0.10
2,600.0	0.34	280.20	2,597.4	8.4	-76.0	-36.2	0.24
2,625.0	0.40	273.74	2,622.4	8.4	-76.1	-36.3	0.29
2,650.0	0.44	276.40	2,647.4	8.4	-76.3	-36.4	0.18
2,675.0	0.41	274.56	2,672.4	8.4	-76.5	-36.4	0.13
2,700.0	0.51	275.04	2,697.4	8.4	-76.7	-36.5	0.40
2,725.0	0.44	274.41	2,722.4	8.4	-76.9	-36.6	0.28
2,750.0	0.36	265.19	2,747.4	8.4	-77.1	-36.7	0.41
2,775.0	0.41	253.66	2,772.4	8.4	-77.2	-36.7	0.37
2,800.0	0.47	258.14	2,797.4	8.4	-77.4	-36.8	0.28
2,825.0	0.70	265.49	2,822.4	8.3	-77.7	-36.8	0.97
2,850.0	0.45	276.18	2,847.4	8.3	-77.9	-36.9	1.08
2,875.0	0.41	261.47	2,872.4	8.3	-78.1	-37.0	0.47
2,900.0	0.48	284.54	2,897.4	8.3	-78.3	-37.1	0.76
2,925.0	0.63	277.10	2,922.4	8.4	-78.5	-37.2	0.66
2,950.0	0.65	289.72	2,947.4	8.5	-78.8	-37.3	0.57
2,975.0	0.71	284.16	2,972.4	8.5	-79.1	-37.5	0.36
3,000.0	0.75	280.51	2,997.4	8.6	-79.4	-37.7	0.25
3,025.0	0.76	281.62	3,022.4	8.7	-79.7	-37.9	0.07
3,050.0	0.83	281.07	3,047.4	8.7	-80.1	-38.1	0.28
3,075.0	0.83	278.35	3,072.4	8.8	-80.4	-38.3	0.16
3,100.0	0.89	276.38	3,097.4	8.8	-80.8	-38.5	0.27
3,125.0	0.83	275.79	3,122.4	8.9	-81.2	-38.6	0.24
3,150.0	0.86	271.17	3,147.4	8.9	-81.5	-38.8	0.30
3,175.0	0.82	272.26	3,172.4	8.9	-81.9	-38.9	0.17
3,200.0	0.69	284.03	3,197.4	9.0	-82.2	-39.1	0.81
3,225.0	0.54	287.12	3,222.4	9.0	-82.5	-39.3	0.61
3,250.0	0.54	288.82	3,247.4	9.1	-82.7	-39.4	0.06
3,275.0	0.55	279.55	3,272.4	9.2	-82.9	-39.6	0.35
3,300.0	0.55	282.73	3,297.4	9.2	-83.2	-39.7	0.12
3,325.0	0.60	276.23	3,322.4	9.3	-83.4	-39.8	0.33
3,350.0	0.58	275.66	3,347.4	9.3	-83.7	-39.9	0.08
3,375.0	0.66	265.05	3,372.4	9.3	-83.9	-40.0	0.56
3,400.0	0.64	268.12	3,397.4	9.3	-84.2	-40.1	0.16
3,425.0	0.66	284.40	3,422.4	9.3	-84.5	-40.3	0.74
3,450.0	0.61	288.37	3,447.4	9.4	-84.8	-40.4	0.27
3,475.0	0.64	275.67	3,472.4	9.4	-85.0	-40.6	0.57
3,500.0	0.66	274.69	3,497.4	9.5	-85.3	-40.7	0.09
3,525.0	0.62	274.84	3,522.4	9.5	-85.6	-40.8	0.16
3,550.0	0.62	271.50	3,547.4	9.5	-85.9	-41.0	0.14
3,575.0	0.64	268.80	3,572.4	9.5	-86.1	-41.1	0.14

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Project: Doddridge County WV
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Wellbore: Original Wellpath
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3,600.0	0.62	269.43	3,597.4	9.5	-86.4	-41.2	0.08
3,625.0	0.91	255.07	3,622.4	9.4	-86.7	-41.2	1.38
3,650.0	1.49	249.60	3,647.4	9.3	-87.2	-41.3	2.36
3,675.0	2.04	245.42	3,672.4	9.0	-88.0	-41.3	2.26
3,700.0	2.63	244.55	3,697.3	8.5	-88.9	-41.2	2.36
3,725.0	3.25	245.37	3,722.3	8.0	-90.0	-41.1	2.49
3,750.0	3.75	245.44	3,747.3	7.4	-91.4	-41.1	2.00
3,775.0	4.70	245.95	3,772.2	6.6	-93.1	-41.0	3.80
3,800.0	5.14	246.00	3,797.1	5.7	-95.1	-40.9	1.76
3,825.0	6.11	247.46	3,822.0	4.8	-97.3	-40.9	3.92
3,850.0	6.72	246.48	3,846.8	3.7	-99.9	-40.8	2.48
3,875.0	7.51	248.12	3,871.6	2.5	-102.7	-40.8	3.26
3,900.0	8.26	249.53	3,896.4	1.2	-105.9	-40.8	3.10
3,925.0	9.04	250.63	3,921.1	0.0	-109.5	-41.0	3.19
3,950.0	9.49	250.81	3,945.8	-1.4	-113.3	-41.2	1.80
3,975.0	9.84	251.44	3,970.4	-2.7	-117.2	-41.4	1.46
4,000.0	10.38	251.68	3,995.0	-4.1	-121.4	-41.7	2.17
4,025.0	10.78	252.42	4,019.6	-5.5	-125.8	-42.0	1.69
4,050.0	11.12	252.89	4,044.2	-6.9	-130.3	-42.4	1.41
4,075.0	11.58	253.31	4,068.7	-8.4	-135.0	-42.8	1.87
4,100.0	12.21	253.24	4,093.1	-9.9	-140.0	-43.3	2.52
4,125.0	12.81	254.12	4,117.5	-11.4	-145.1	-43.8	2.52
4,150.0	13.35	255.19	4,141.9	-12.9	-150.6	-44.5	2.37
4,175.0	13.89	255.66	4,166.2	-14.3	-156.3	-45.2	2.20
4,200.0	14.36	256.59	4,190.4	-15.8	-162.2	-46.1	2.09
4,225.0	15.04	257.90	4,214.6	-17.2	-168.4	-47.1	3.03
4,250.0	15.54	257.95	4,238.7	-18.6	-174.9	-48.2	2.00
4,275.0	16.25	258.18	4,262.8	-20.0	-181.6	-49.4	2.85
4,300.0	16.67	256.91	4,286.7	-21.5	-188.5	-50.6	2.21
4,325.0	17.74	254.37	4,310.6	-23.4	-195.6	-51.6	5.23
4,350.0	18.34	252.79	4,334.4	-25.6	-203.1	-52.3	3.10
4,375.0	19.12	251.50	4,358.1	-28.0	-210.7	-52.9	3.53
4,400.0	20.27	250.42	4,381.6	-30.8	-218.7	-53.3	4.82
4,425.0	21.05	250.02	4,405.0	-33.8	-227.0	-53.7	3.17
4,450.0	22.12	248.92	4,428.2	-37.0	-235.6	-53.9	4.58
4,475.0	22.96	248.40	4,451.3	-40.5	-244.5	-54.0	3.45
4,500.0	24.30	247.39	4,474.2	-44.2	-253.8	-54.0	5.60
4,525.0	24.88	247.00	4,497.0	-48.3	-263.4	-53.9	2.41
4,550.0	26.02	246.39	4,519.5	-52.5	-273.2	-53.6	4.68
4,575.0	26.70	246.97	4,541.9	-56.9	-283.4	-53.3	2.91
4,600.0	27.20	247.62	4,564.2	-61.3	-293.9	-53.2	2.32
4,625.0	26.38	247.18	4,586.5	-65.6	-304.3	-53.1	3.37
4,650.0	26.35	247.05	4,608.9	-69.9	-314.5	-52.9	0.26
4,675.0	25.42	248.96	4,631.4	-74.0	-324.6	-52.9	5.00

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Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	EW (usft)	V. Sec (usft)	DLeg (°/100usft)
4,700.0	25.48	249.32	4,654.0	-77.9	-334.7	-53.1	0.66
4,725.0	24.87	249.80	4,676.6	-81.6	-344.6	-53.4	2.57
4,750.0	24.85	250.37	4,699.3	-85.2	-354.5	-53.8	0.96
4,775.0	25.27	251.51	4,722.0	-88.6	-364.5	-54.3	2.56
4,800.0	25.62	252.36	4,744.5	-91.9	-374.7	-55.1	2.02
4,825.0	26.30	253.02	4,767.0	-95.2	-385.2	-56.0	2.96
4,850.0	27.35	253.79	4,789.3	-98.4	-396.0	-57.0	4.42
4,875.0	27.77	254.14	4,811.5	-101.6	-407.1	-58.2	1.80
4,900.0	27.95	255.15	4,833.6	-104.7	-418.4	-59.6	2.02
4,925.0	28.18	255.80	4,855.7	-107.7	-429.8	-61.1	1.53
4,950.0	28.04	257.08	4,877.7	-110.4	-441.2	-62.8	2.48
4,975.0	27.82	257.69	4,899.8	-113.0	-452.6	-64.7	1.44
5,000.0	27.49	258.56	4,921.9	-115.4	-464.0	-66.8	2.09
5,025.0	27.30	258.63	4,944.1	-117.6	-475.3	-68.9	0.77
5,050.0	27.07	258.10	4,966.4	-119.9	-486.5	-70.9	1.34
5,075.0	26.94	257.71	4,988.6	-122.3	-497.6	-72.9	0.88
5,100.0	26.95	257.07	5,010.9	-124.8	-508.6	-74.7	1.16
5,125.0	27.01	256.91	5,033.2	-127.3	-519.7	-76.5	0.38
5,150.0	27.30	256.27	5,055.5	-130.0	-530.8	-78.2	1.65
5,175.0	27.87	255.93	5,077.6	-132.8	-542.0	-79.8	2.37
5,200.0	28.05	255.81	5,099.7	-135.6	-553.4	-81.4	0.75
5,225.0	28.42	255.86	5,121.7	-138.5	-564.8	-83.0	1.48
5,250.0	28.98	255.97	5,143.7	-141.5	-576.5	-84.7	2.25
5,275.0	29.51	256.62	5,165.5	-144.3	-588.3	-86.5	2.47
5,300.0	29.74	257.50	5,187.2	-147.1	-600.4	-88.4	1.97
5,325.0	29.61	259.01	5,208.9	-149.6	-612.5	-90.6	3.04
5,350.0	29.60	260.44	5,230.7	-151.8	-624.7	-93.1	2.83
5,375.0	29.24	260.76	5,252.4	-153.8	-636.8	-95.8	1.57
5,400.0	28.67	260.15	5,274.3	-155.8	-648.7	-98.4	2.57
5,425.0	28.04	258.79	5,296.3	-158.0	-660.4	-100.8	3.61
5,450.0	27.17	257.48	5,318.5	-160.4	-671.7	-102.8	4.24
5,475.0	26.62	256.52	5,340.8	-162.9	-682.7	-104.6	2.80
5,500.0	26.73	255.61	5,363.1	-165.6	-693.6	-106.1	1.69
5,525.0	27.11	254.86	5,385.4	-168.5	-704.6	-107.6	2.04
5,550.0	27.49	254.72	5,407.6	-171.5	-715.6	-108.9	1.54
5,575.0	27.94	255.04	5,429.7	-174.6	-726.9	-110.3	1.90
5,600.0	27.70	254.95	5,451.8	-177.6	-738.1	-111.7	0.97
5,625.0	27.40	254.89	5,474.0	-180.6	-749.3	-113.1	1.21
5,650.0	27.21	255.66	5,496.2	-183.5	-760.4	-114.6	1.60
5,675.0	27.02	257.07	5,518.5	-186.2	-771.5	-116.2	2.68
5,700.0	26.57	257.49	5,540.8	-188.7	-782.5	-118.0	1.95
5,725.0	26.25	257.28	5,563.2	-191.1	-793.3	-119.8	1.33
5,750.0	26.14	256.86	5,585.6	-193.6	-804.1	-121.6	0.86
5,775.0	26.08	256.19	5,608.1	-196.1	-814.8	-123.2	1.20

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Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
5,800.0	25.56	255.73	5,630.6	-198.8	-825.3	-124.7	2.23
5,825.0	25.47	255.39	5,653.1	-201.5	-835.8	-126.1	0.69
5,850.0	25.61	256.00	5,675.7	-204.1	-846.2	-127.6	1.19
5,875.0	25.50	255.90	5,698.2	-206.7	-856.7	-129.1	0.47
5,900.0	25.19	256.10	5,720.8	-209.3	-867.0	-130.6	1.29
5,925.0	25.08	256.31	5,743.5	-211.9	-877.4	-132.1	0.57
5,950.0	25.32	256.45	5,766.1	-214.4	-887.7	-133.6	0.99
5,975.0	25.20	255.71	5,788.7	-216.9	-898.1	-135.1	1.35
6,000.0	25.07	254.06	5,811.3	-219.7	-908.3	-136.4	2.85
6,025.0	25.08	252.45	5,834.0	-222.8	-918.5	-137.4	2.73
6,050.0	25.02	250.15	5,856.6	-226.2	-928.5	-138.0	3.90
6,075.0	24.46	247.56	5,879.3	-229.9	-938.2	-138.1	4.88
6,100.0	24.25	246.86	5,902.1	-233.9	-947.7	-138.0	1.43
6,125.0	24.19	247.52	5,924.9	-237.9	-957.2	-137.8	1.11
6,150.0	24.19	249.34	5,947.7	-241.7	-966.7	-137.9	2.98
6,175.0	24.61	251.07	5,970.5	-245.2	-976.4	-138.3	3.32
6,200.0	25.63	251.69	5,993.1	-248.5	-986.5	-138.9	4.21
6,225.0	26.40	252.11	6,015.6	-251.9	-996.9	-139.7	3.17
6,250.0	26.66	253.16	6,037.9	-255.3	-1,007.6	-140.6	2.14
6,275.0	26.89	255.20	6,060.3	-258.4	-1,018.4	-141.8	3.79
6,300.0	26.77	258.03	6,082.6	-261.0	-1,029.4	-143.5	5.13
6,325.0	26.64	260.37	6,104.9	-263.1	-1,040.4	-145.6	4.24
6,350.0	26.80	261.94	6,127.2	-264.8	-1,051.5	-148.2	2.90
6,368.0	27.26	262.65	6,143.3	-265.9	-1,059.7	-150.2	3.11
6,460.0	26.64	259.76	6,225.3	-272.3	-1,100.8	-159.7	1.58
6,505.0	26.29	259.58	6,265.6	-275.9	-1,120.6	-163.8	0.80
6,550.0	26.56	255.63	6,305.9	-280.1	-1,140.1	-167.1	3.95
6,595.0	29.11	243.14	6,345.7	-287.6	-1,159.6	-167.5	14.11
6,640.0	32.27	234.88	6,384.4	-299.5	-1,179.2	-163.9	11.69
6,684.0	36.23	229.08	6,420.8	-314.7	-1,198.7	-157.0	11.66
6,707.0	38.48	225.97	6,439.1	-324.2	-1,209.0	-152.1	12.77
SMR							
6,729.0	40.71	223.28	6,456.0	-334.2	-1,218.8	-146.5	12.77
6,774.0	44.76	218.36	6,489.1	-357.3	-1,238.7	-132.5	11.66
6,819.0	45.11	210.63	6,521.0	-383.4	-1,256.7	-115.0	12.15
6,864.0	45.55	202.01	6,552.6	-412.1	-1,270.8	-93.8	13.65
6,909.0	46.25	195.60	6,583.9	-442.6	-1,281.2	-69.3	10.34
6,946.0	47.96	190.87	6,609.1	-469.0	-1,287.4	-47.2	10.45
MDLX							
6,954.0	48.36	189.88	6,614.5	-474.9	-1,288.5	-42.1	10.45
6,999.0	49.24	183.12	6,644.1	-508.5	-1,292.3	-12.4	11.47
7,043.0	50.21	176.70	6,672.6	-542.0	-1,292.2	18.7	11.35
7,088.0	50.39	169.84	6,701.4	-576.4	-1,288.2	52.1	11.73
7,133.0	52.58	162.90	6,729.4	-610.5	-1,279.9	86.9	13.01

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MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	EW (usft)	V. Sec (usft)	DLeg (°/100usft)
7,157.0	54.68	160.89	6,743.6	-628.9	-1,273.9	106.2	11.05
BRKT							
7,178.0	56.54	159.21	6,755.5	-645.2	-1,267.9	123.5	11.05
7,211.0	59.18	157.71	6,773.1	-671.2	-1,257.7	151.4	8.89
TLLY							
7,223.0	60.15	157.19	6,779.1	-680.7	-1,253.7	161.8	8.89
7,268.0	64.02	157.10	6,800.2	-717.4	-1,238.3	201.5	8.60
7,301.0	66.85	156.06	6,813.9	-744.9	-1,226.3	231.5	9.04
HMLN							
7,313.0	67.88	155.69	6,818.5	-755.0	-1,221.8	242.6	9.04
7,329.0	69.48	155.53	6,824.3	-768.6	-1,215.7	257.5	10.04
MRCL_HOT							
7,357.0	72.28	155.25	6,833.5	-792.6	-1,204.6	283.9	10.04
7,402.0	75.77	154.74	6,845.9	-831.8	-1,186.4	327.1	7.83
7,447.0	79.40	155.17	6,855.6	-871.7	-1,167.8	371.0	8.12
7,492.0	84.50	156.92	6,861.9	-912.4	-1,149.7	415.5	11.97
7,518.0	87.14	157.45	6,863.7	-936.3	-1,139.6	441.4	10.36
7,608.0	90.04	160.35	6,866.0	-1,020.2	-1,107.2	531.4	4.56
7,698.0	90.40	160.44	6,865.6	-1,105.0	-1,077.0	621.3	0.41
7,787.0	90.40	158.95	6,865.0	-1,188.4	-1,046.2	710.2	1.67
7,877.0	88.81	160.44	6,865.6	-1,272.8	-1,014.9	800.2	2.42
7,966.0	89.08	160.09	6,867.3	-1,356.6	-984.9	889.1	0.50
8,056.0	88.99	160.09	6,868.8	-1,441.2	-954.2	979.0	0.10
8,146.0	89.08	159.82	6,870.3	-1,525.7	-923.4	1,069.0	0.32
8,235.0	89.25	159.47	6,871.6	-1,609.2	-892.4	1,157.9	0.44
8,325.0	89.60	158.68	6,872.5	-1,693.2	-860.3	1,247.9	0.96
8,415.0	89.96	155.52	6,872.8	-1,776.1	-825.3	1,337.9	3.53
8,504.0	90.13	159.56	6,872.8	-1,858.4	-791.3	1,426.9	4.54
8,594.0	89.87	158.42	6,872.8	-1,942.4	-759.0	1,516.8	1.30
8,684.0	89.16	161.32	6,873.5	-2,026.9	-728.0	1,606.8	3.32
8,773.0	88.81	159.47	6,875.1	-2,110.7	-698.2	1,695.7	2.12
8,863.0	88.55	159.91	6,877.2	-2,195.1	-667.0	1,785.6	0.57
8,953.0	89.60	159.12	6,878.6	-2,279.4	-635.5	1,875.6	1.46
9,042.0	89.52	159.65	6,879.3	-2,362.7	-604.1	1,964.6	0.60
9,132.0	89.16	159.74	6,880.3	-2,447.1	-572.9	2,054.5	0.41
9,222.0	89.25	156.84	6,881.6	-2,530.7	-539.6	2,144.5	3.22
9,312.0	89.16	156.84	6,882.8	-2,613.4	-504.2	2,234.5	0.10
9,402.0	89.60	157.19	6,883.8	-2,696.2	-469.1	2,324.4	0.62
9,491.0	89.87	158.15	6,884.2	-2,778.6	-435.3	2,413.4	1.12
9,581.0	90.13	157.63	6,884.2	-2,861.9	-401.4	2,503.4	0.65
9,671.0	90.66	155.34	6,883.6	-2,944.5	-365.5	2,593.4	2.61
9,760.0	89.96	156.84	6,883.1	-3,025.8	-329.4	2,682.3	1.86
9,850.0	88.72	155.52	6,884.2	-3,108.2	-293.1	2,772.3	2.01
9,940.0	89.25	159.30	6,885.8	-3,191.2	-258.5	2,862.3	4.24
10,030.0	90.40	162.20	6,886.0	-3,276.2	-228.8	2,952.1	3.47

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10,119.0	89.87	159.12	6,885.8	-3,360.1	-199.4	3,041.0	3.51
10,209.0	88.46	157.10	6,887.1	-3,443.6	-165.8	3,131.0	2.74
10,299.0	89.87	157.36	6,888.4	-3,526.6	-131.0	3,221.0	1.59
10,388.0	90.04	156.05	6,888.5	-3,608.4	-95.8	3,310.0	1.48
10,481.0	89.96	155.25	6,888.5	-3,693.1	-57.5	3,402.9	0.86
10,575.0	90.57	159.65	6,888.1	-3,779.9	-21.4	3,496.9	4.73
10,669.0	90.92	160.09	6,886.9	-3,868.1	10.9	3,590.8	0.60
10,763.0	90.92	159.74	6,885.4	-3,956.4	43.2	3,684.7	0.37
10,857.0	89.34	159.65	6,885.1	-4,044.6	75.8	3,778.7	1.68
10,951.0	89.52	159.03	6,886.1	-4,132.5	109.0	3,872.7	0.69
11,045.0	88.90	159.38	6,887.4	-4,220.4	142.4	3,966.6	0.76
11,139.0	89.96	157.54	6,888.3	-4,307.8	176.9	4,060.6	2.26
11,232.0	89.52	155.96	6,888.7	-4,393.2	213.6	4,153.6	1.76
11,326.0	88.99	154.99	6,890.0	-4,478.7	252.6	4,247.5	1.18
11,420.0	88.72	155.43	6,891.8	-4,564.1	292.0	4,341.4	0.55
11,514.0	90.04	155.34	6,892.8	-4,649.5	331.1	4,435.3	1.41
11,604.0	88.90	156.13	6,893.7	-4,731.6	368.1	4,525.2	1.54
11,694.0	88.11	153.85	6,896.0	-4,813.1	406.2	4,615.0	2.68
11,783.0	88.64	155.96	6,898.6	-4,893.7	443.9	4,703.8	2.44
11,873.0	88.64	157.10	6,900.7	-4,976.2	479.7	4,793.8	1.27
11,963.0	88.81	158.33	6,902.7	-5,059.4	513.8	4,883.8	1.38
12,052.0	89.52	160.44	6,904.0	-5,142.7	545.2	4,972.7	2.50
12,142.0	89.25	160.53	6,905.0	-5,227.5	575.2	5,062.6	0.32
12,232.0	88.99	158.59	6,906.3	-5,311.9	606.7	5,152.6	2.17
12,321.0	89.96	158.68	6,907.2	-5,394.7	639.1	5,241.6	1.09
12,411.0	89.69	157.63	6,907.4	-5,478.3	672.6	5,331.6	1.20
12,500.0	89.16	156.05	6,908.3	-5,560.1	707.6	5,420.5	1.87
12,590.0	88.99	158.07	6,909.8	-5,643.0	742.6	5,510.5	2.25
12,680.0	89.34	159.03	6,911.1	-5,726.7	775.6	5,600.5	1.14
12,769.0	89.25	160.09	6,912.2	-5,810.1	806.6	5,689.5	1.20
12,859.0	89.78	158.95	6,912.9	-5,894.4	838.1	5,779.4	1.40
12,948.0	89.34	157.01	6,913.6	-5,976.9	871.5	5,868.4	2.24
13,038.0	90.13	158.24	6,914.0	-6,060.1	905.7	5,958.4	1.62
13,128.0	89.52	154.38	6,914.3	-6,142.5	941.9	6,048.4	4.34
13,218.0	89.78	156.13	6,914.9	-6,224.3	979.6	6,138.2	1.97
13,307.0	88.90	155.08	6,915.9	-6,305.3	1,016.3	6,227.2	1.54
13,397.0	89.52	158.59	6,917.1	-6,388.0	1,051.7	6,317.1	3.96
13,487.0	89.87	163.87	6,917.6	-6,473.2	1,080.7	6,406.9	5.88
13,576.0	88.90	162.02	6,918.6	-6,558.3	1,106.8	6,495.6	2.35
13,666.0	88.72	161.76	6,920.4	-6,643.8	1,134.7	6,585.4	0.35
13,756.0	89.34	161.05	6,922.0	-6,729.1	1,163.4	6,675.2	1.05
13,845.0	89.25	158.59	6,923.1	-6,812.6	1,194.1	6,764.1	2.77
13,935.0	87.76	157.01	6,925.4	-6,895.9	1,228.1	6,854.1	2.41
14,024.0	89.43	156.57	6,927.6	-6,977.7	1,263.2	6,943.1	1.94
14,114.0	90.22	157.98	6,927.9	-7,060.7	1,297.9	7,033.1	1.80



Company: Antero
Project: Doddridge County WV
Site: Melody Pad
Well: Yoho Unit 2H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Yoho Unit 2H
TVD Reference: Precision 525: GL 1135' + KB 19' @ 1154.0usft
MD Reference: Precision 525: GL 1135' + KB 19' @ 1154.0usft
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)
14,204.0	90.57	158.68	6,927.2	-7,144.4	1,331.2	7,123.0	0.87
14,293.0	89.87	159.65	6,926.9	-7,227.5	1,362.8	7,212.0	1.34
14,382.0	88.72	158.07	6,928.0	-7,310.5	1,394.9	7,301.0	2.20
14,472.0	88.90	158.33	6,929.9	-7,394.1	1,428.3	7,391.0	0.35
14,562.0	89.43	157.10	6,931.2	-7,477.3	1,462.5	7,481.0	1.49
14,651.0	88.90	158.24	6,932.5	-7,559.7	1,496.3	7,570.0	1.41
14,741.0	89.08	158.77	6,934.1	-7,643.4	1,529.3	7,659.9	0.62
14,831.0	87.49	157.98	6,936.8	-7,727.0	1,562.4	7,749.9	1.97
14,921.0	88.81	157.54	6,939.7	-7,810.3	1,596.4	7,839.8	1.55
15,010.0	87.58	156.75	6,942.5	-7,892.2	1,631.0	7,928.8	1.64
15,100.0	88.46	157.89	6,945.6	-7,975.2	1,665.7	8,018.7	1.60
15,190.0	89.60	157.98	6,947.1	-8,058.6	1,699.5	8,108.7	1.27
15,279.0	90.04	158.42	6,947.4	-8,141.3	1,732.5	8,197.7	0.70
15,369.0	89.60	157.45	6,947.7	-8,224.7	1,766.3	8,287.7	1.18
15,459.0	89.16	156.84	6,948.6	-8,307.6	1,801.3	8,377.7	0.84
15,548.0	89.52	158.42	6,949.7	-8,389.9	1,835.2	8,466.7	1.82
15,638.0	88.99	157.19	6,950.8	-8,473.2	1,869.2	8,556.7	1.49
15,728.0	90.92	158.59	6,950.9	-8,556.6	1,903.0	8,646.7	2.65
15,818.0	90.48	158.51	6,949.8	-8,640.3	1,935.9	8,736.7	0.50
15,907.0	90.57	157.45	6,949.0	-8,722.8	1,969.3	8,825.7	1.20
15,997.0	90.66	156.31	6,948.0	-8,805.6	2,004.6	8,915.6	1.27
16,087.0	90.84	154.81	6,946.8	-8,887.5	2,041.9	9,005.5	1.68
16,176.0	90.48	158.51	6,945.8	-8,969.2	2,077.1	9,094.5	4.18
16,266.0	89.69	161.23	6,945.7	-9,053.7	2,108.1	9,184.4	3.15
16,355.0	90.92	159.47	6,945.2	-9,137.5	2,138.0	9,273.4	2.41
16,445.0	90.75	157.98	6,943.9	-9,221.4	2,170.7	9,363.3	1.67
16,535.0	90.22	156.48	6,943.1	-9,304.4	2,205.5	9,453.3	1.77
16,625.0	89.34	157.10	6,943.5	-9,387.1	2,241.0	9,543.3	1.20
16,714.0	90.04	157.54	6,944.0	-9,469.2	2,275.3	9,632.3	0.93
16,804.0	89.52	157.28	6,944.3	-9,552.3	2,309.9	9,722.3	0.65
16,821.0	89.43	157.89	6,944.5	-9,568.0	2,316.3	9,739.3	3.63
16,880.0	90.50	158.00	6,944.5	-9,622.7	2,338.5	9,798.3	1.82

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 WV GEOLOGICAL SURVEY
 MORGANTOWN, WV

Company: Antero
Project: Doddridge County WV
Site: Melody Pad
Well: Yoho Unit 2H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Yoho Unit 2H
TVD Reference: Precision 525: GL 1135' + KB 19' @ 1154.0usft
MD Reference: Precision 525: GL 1135' + KB 19' @ 1154.0usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Oklahoma District

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
6,707.0	6,439.1	-324.2	-1,209.0	SMR
6,946.0	6,609.1	-469.0	-1,287.4	MDLX
7,157.0	6,743.6	-628.9	-1,273.9	BRKT
7,211.0	6,773.1	-671.2	-1,257.7	TLLY
7,301.0	6,813.9	-744.9	-1,226.3	HMLN
7,329.0	6,824.3	-768.6	-1,215.7	MRCL_HOT

Checked By: _____ Approved By: _____ Date: _____

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 WV GEOLOGICAL SURVEY
 MORGANTOWN, WV