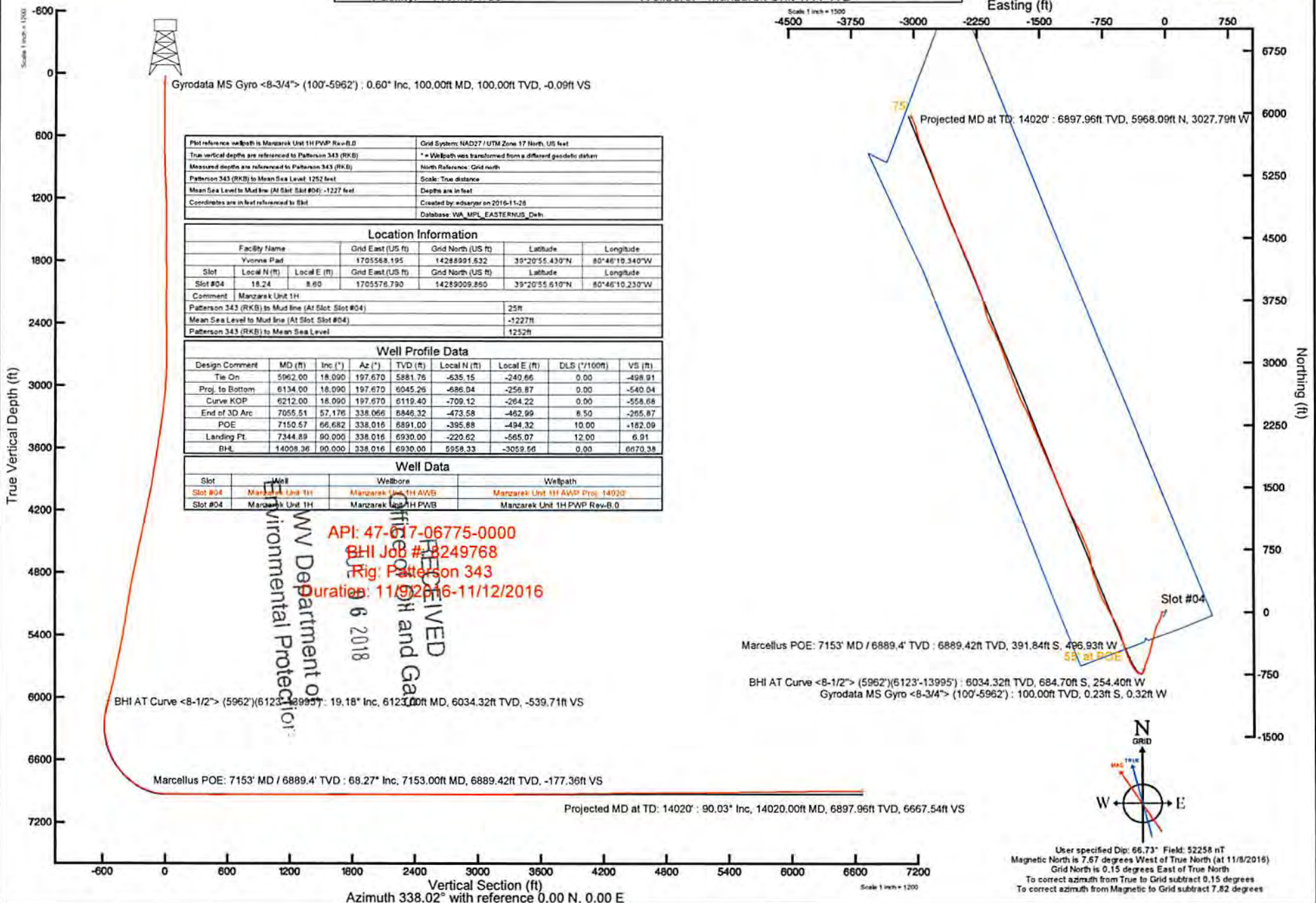




ANTERO RESOURCES CORPORATION

Location: Doddridge Co., WV
Field: Doddridge
Facility: Yvonne Pad

Slot: Slot #04
Well: Manzarek Unit 1H
Wellbore: Manzarek Unit 1H PWB



Gyrodatta MS Gyro <8-3/4"> (100'-5962') : 0.60° Inc, 100.00ft MD, 100.00ft TVD, -0.09ft VS

| | |
|--|---|
| Plot reference wellbore is Manzarek Unit 1H PWB Rev-B.0 | Grid System: NAD27 / UTM Zone 17 North, US feet |
| True vertical depths are referenced to Patterson 343 (RKB) | * = Wellbore was transformed from a different geoidetic datum |
| Measured depths are referenced to Patterson 343 (RKB) | North Reference: Grid north |
| Patterson 343 (RKB) to Mean Sea Level: 1252 feet | Scale: True distance |
| Mean Sea Level to Mud line (At Slot Slot #04): -1227 feet | Depth are in feet |
| Coordinates are in feet referenced to BH | Created by: edjaney on 2016-11-28 |
| | Database: WA_MPL_EASTERNUS_DeW |

| Location Information | | | | | |
|--|-------------------|--------------------|-------------------|--------------------|-------------------------------|
| Facility Name | Grid East (US ft) | Grid North (US ft) | Latitude | Longitude | |
| Yvonne Pad | 1705568.195 | 1428991.632 | 39°20'55.430"N | 80°46'10.340"W | |
| Slot | Local N (ft) | Local E (ft) | Grid East (US ft) | Grid North (US ft) | Longitude |
| Slot #04 | 18.24 | 8.60 | 1705576.790 | 1428990.850 | 39°20'55.610"N 80°46'10.230"W |
| Comment | Manzarek Unit 1H | | | | |
| Patterson 343 (RKB) to Mud line (At Slot Slot #04) | 25ft | | | | |
| Mean Sea Level to Mud line (At Slot Slot #04) | -1227ft | | | | |
| Patterson 343 (RKB) to Mean Sea Level | 1252ft | | | | |

| Well Profile Data | | | | | | | | |
|-------------------|----------|----------|---------|----------|--------------|--------------|---------------|---------|
| Design Comment | MD (ft) | Inc. (") | Az (°) | TVD (ft) | Local N (ft) | Local E (ft) | DLS (°/100ft) | VS (ft) |
| Tie On | 5962.00 | 18.090 | 197.670 | 5881.75 | -535.15 | -240.66 | 0.00 | -498.91 |
| Proj. to Bottom | 6134.00 | 18.090 | 197.670 | 6045.26 | -586.04 | -256.87 | 0.00 | -540.04 |
| Curve KOP | 6212.00 | 18.090 | 197.670 | 6119.40 | -709.12 | -264.22 | 0.00 | -558.68 |
| End of 3D Arc | 7055.51 | 57.176 | 338.066 | 8846.32 | -473.58 | -462.99 | 8.50 | -265.87 |
| PDE | 7150.57 | 66.682 | 338.016 | 8891.00 | -395.88 | -494.32 | 10.00 | -182.09 |
| Landing Pt | 7344.89 | 90.000 | 338.016 | 6930.00 | -220.62 | -565.07 | 12.00 | 6.91 |
| BH | 14008.36 | 90.000 | 338.016 | 6930.00 | 5958.33 | -3059.56 | 0.00 | 6670.38 |

| Well Data | | | |
|-----------|------------------|----------------------|-----------------------------------|
| Slot | Well | Wellbore | Wellpath |
| Slot #04 | Manzarek Unit 1H | Manzarek Unit 1H AWB | Manzarek Unit 1H AWB Proj. 14020' |
| Slot #04 | Manzarek Unit 1H | Manzarek Unit 1H PWB | Manzarek Unit 1H PWB Rev-B.0 |

API: 47-017-06775-0000
BHI Job #: 8249768
Rig: Patterson 343
Duration: 11/9/2016-11/12/2016

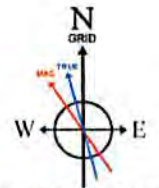
BHI AT Curve <8-1/2"> (5962')(6123'-13995') : 19.18° Inc, 6123.00ft MD, 6034.32ft TVD, -539.71ft VS

Marcellus POE: 7153' MD / 6889.4' TVD : 68.27° Inc, 7153.00ft MD, 6889.42ft TVD, -177.36ft VS

Projected MD at TD: 14020' : 90.03° Inc, 14020.00ft MD, 6897.96ft TVD, 6667.54ft VS

Marcellus POE: 7153' MD / 6889.4' TVD : 68.27° Inc, 7153.00ft MD, 6889.42ft TVD, -177.36ft VS

BHI AT Curve <8-1/2"> (5962')(6123'-13995') : 6034.32ft TVD, 684.70ft S, 254.40ft W
Gyrodatta MS Gyro <8-3/4"> (100'-5962') : 100.00ft TVD, 0.23ft S, 0.32ft W



User specified Dip: 66.73° Field: 52258 nT
Magnetic North is 7.67 degrees West of True North (at 11/8/2016)
Grid North is 0.15 degrees East of True North
To correct azimuth from True to Grid subtract 0.15 degrees
To correct azimuth from Magnetic to Grid subtract 7.82 degrees

Vertical Section (ft)
Azimuth 338.02° with reference 0.00 N, 0.00 E



Actual Wellpath Report

Manzarek Unit 1H AWP Proj: 14020'

Page 1 of 9



REFERENCE WELLPATH IDENTIFICATION

| | | | |
|----------|------------------------------|----------|----------------------|
| Operator | ANTERO RESOURCES CORPORATION | Slot | Slot #04 |
| Area | Doddridge Co., WV | Well | Manzarek Unit 1H |
| Field | Doddridge | Wellbore | Manzarek Unit 1H AWP |
| Facility | Yvonne Pad | | |

REPORT SETUP INFORMATION

| | | | |
|---------------------|------------------------------------|----------------------|--|
| Projection System | NAD27 / UTM Zone 17 North, US feet | Software System | WellArchitect® 5.0 |
| North Reference | Grid | User | Edsaryar |
| Scale | 0.999605 | Report Generated | 11/26/2016 at 2:21:53 PM |
| Convergence at slot | 0.15° East | Database/Source file | WA_MPL_EASTERNUS_Defn/Manzarek_Unit_1H_AWP_Proj_14020_.xml |

WELLPATH LOCATION

| | Local coordinates | | Grid coordinates | | Geographic coordinates | |
|-----------------------|-------------------|----------|------------------|-----------------|------------------------|----------------|
| | North[ft] | East[ft] | Easting[US ft] | Northing[US ft] | Latitude | Longitude |
| Slot Location | 18.24 | 8.60 | 1705576.79 | 14289009.86 | 39°20'55.610"N | 80°46'10.230"W |
| Facility Reference Pt | | | 1705568.20 | 14288991.63 | 39°20'55.430"N | 80°46'10.340"W |
| Field Reference Pt | | | 0.00 | 0.00 | 0°00'00.000" | 85°29'19.301"W |

WELLPATH DATUM

| | | | |
|--------------------------|---------------------|--|-------------------|
| Calculation method | Minimum curvature | Patterson 343 (RKB) to Facility Vertical Datum | 25.00ft |
| Horizontal Reference Pt | Slot | Patterson 343 (RKB) to Mean Sea Level | 1252.00ft |
| Vertical Reference Pt | Patterson 343 (RKB) | Patterson 343 (RKB) to Mud Line at Slot (Slot #04) | 25.00ft |
| MD Reference Pt | Patterson 343 (RKB) | Section Origin | N 0.00, E 0.00 ft |
| Field Vertical Reference | Mean Sea Level | Section Azimuth | 338.02° |



Actual Wellpath Report

Manzarek Unit 1H AWP Proj: 14020'

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| REFERENCE WELLPATH IDENTIFICATION | | | |
|-----------------------------------|------------------------------|----------|----------------------|
| Operator | ANTERO RESOURCES CORPORATION | Slot | Slot #04 |
| Area | Doddridge Co., WV | Well | Manzarek Unit 1H |
| Field | Doddridge | Wellbore | Manzarek Unit 1H AWP |
| Facility | Yvonne Pad | | |

| WELLPATH DATA (165 stations) † = interpolated/extrapolated station | | | | | | | | | | | | | | | | |
|--|-----------------|-------------|----------|----------------|------------|-----------|-------------------|--------------------|----------------|----------------|-------------------|-----------------|---------------|----------------------|---------------------|--|
| MD [ft] | Inclination [°] | Azimuth [°] | TVD [ft] | Vert Sect [ft] | North [ft] | East [ft] | Grid East [US ft] | Grid North [US ft] | Latitude | Longitude | Closure Dist [ft] | Closure Dir [°] | DLS ["/100ft] | Build Rate ["/100ft] | Turn Rate ["/100ft] | Comments |
| 0.00 | 0.00 | 234.960 | 0.00 | 0.00 | 0.00 | 0.00 | 1705576.79 | 14289009.86 | 39°20'55.610"N | 80°46'10.230"W | 0.00 | 0.000 | 0.00 | 0.00 | 0.00 | |
| 25.00 | 0.00 | 234.960 | 25.00 | 0.00 | 0.00 | 0.00 | 1705576.79 | 14289009.86 | 39°20'55.610"N | 80°46'10.230"W | 0.00 | 0.000 | 0.00 | 0.00 | 0.00 | |
| 100.00 | 0.600 | 234.960 | 100.00 | -0.09 | -0.23 | -0.32 | 1705576.47 | 14289009.63 | 39°20'55.608"N | 80°46'10.234"W | 0.39 | 234.960 | 0.80 | 0.80 | -166.72 | Gyrodata MS Gyro <8-3/4"> (100'-5962') |
| 200.00 | 0.590 | 235.090 | 199.99 | -0.32 | -0.82 | -1.17 | 1705575.62 | 14289009.04 | 39°20'55.602"N | 80°46'10.245"W | 1.43 | 235.007 | 0.01 | -0.01 | 0.13 | |
| 300.00 | 0.300 | 227.310 | 299.99 | -0.53 | -1.29 | -1.79 | 1705575.00 | 14289008.57 | 39°20'55.597"N | 80°46'10.253"W | 2.21 | 234.115 | 0.30 | -0.29 | -7.78 | |
| 400.00 | 0.310 | 233.580 | 399.99 | -0.69 | -1.63 | -2.20 | 1705574.59 | 14289008.23 | 39°20'55.594"N | 80°46'10.258"W | 2.74 | 233.413 | 0.03 | 0.01 | 6.27 | |
| 500.00 | 0.290 | 229.620 | 499.99 | -0.84 | -1.96 | -2.61 | 1705574.18 | 14289007.91 | 39°20'55.591"N | 80°46'10.263"W | 3.26 | 233.132 | 0.03 | -0.02 | -3.96 | |
| 600.00 | 0.160 | 133.770 | 599.99 | -1.04 | -2.22 | -2.70 | 1705574.09 | 14289007.64 | 39°20'55.588"N | 80°46'10.264"W | 3.49 | 230.617 | 0.35 | -0.13 | -95.85 | |
| 700.00 | 0.360 | 299.780 | 699.99 | -0.93 | -2.16 | -2.87 | 1705573.92 | 14289007.70 | 39°20'55.589"N | 80°46'10.267"W | 3.59 | 233.091 | 0.52 | 0.20 | 166.01 | |
| 800.00 | 1.840 | 299.190 | 799.97 | 0.57 | -1.22 | -4.55 | 1705572.25 | 14289008.64 | 39°20'55.598"N | 80°46'10.288"W | 4.71 | 255.005 | 1.48 | 1.48 | -0.59 | |
| 900.00 | 3.980 | 285.750 | 899.83 | 3.95 | 0.51 | -9.29 | 1705567.51 | 14289010.37 | 39°20'55.615"N | 80°46'10.348"W | 9.30 | 273.128 | 2.23 | 2.14 | -13.44 | |
| 1000.00 | 4.450 | 282.870 | 999.56 | 8.29 | 2.31 | -16.41 | 1705560.39 | 14289012.17 | 39°20'55.633"N | 80°46'10.439"W | 16.57 | 278.025 | 0.52 | 0.47 | -2.88 | |
| 1100.00 | 4.360 | 281.060 | 1099.27 | 12.56 | 3.91 | -23.92 | 1705552.88 | 14289013.77 | 39°20'55.649"N | 80°46'10.534"W | 24.24 | 279.276 | 0.17 | -0.09 | -1.81 | |
| 1200.00 | 3.120 | 269.680 | 1199.05 | 15.65 | 4.62 | -30.37 | 1705546.43 | 14289014.48 | 39°20'55.656"N | 80°46'10.616"W | 30.72 | 278.650 | 1.44 | -1.24 | -11.38 | |
| 1300.00 | 2.140 | 260.580 | 1298.95 | 17.65 | 4.30 | -34.94 | 1705541.87 | 14289014.16 | 39°20'55.653"N | 80°46'10.675"W | 35.20 | 277.017 | 1.06 | -0.98 | -9.10 | |
| 1400.00 | 1.220 | 238.240 | 1398.90 | 17.29 | 3.43 | -37.69 | 1705539.12 | 14289013.29 | 39°20'55.645"N | 80°46'10.710"W | 37.84 | 275.207 | 1.11 | -0.92 | -22.34 | |
| 1500.00 | 0.660 | 221.030 | 1498.89 | 16.85 | 2.44 | -38.97 | 1705537.84 | 14289012.30 | 39°20'55.635"N | 80°46'10.726"W | 39.04 | 273.582 | 0.62 | -0.56 | -17.21 | |
| 1600.00 | 0.140 | 18.530 | 1598.89 | 16.68 | 2.12 | -39.31 | 1705537.50 | 14289011.98 | 39°20'55.632"N | 80°46'10.730"W | 39.37 | 273.088 | 0.79 | -0.52 | 157.50 | |
| 1700.00 | 0.970 | 9.150 | 1698.88 | 17.50 | 3.07 | -39.13 | 1705537.67 | 14289012.93 | 39°20'55.641"N | 80°46'10.728"W | 39.25 | 274.489 | 0.83 | 0.83 | -9.38 | |
| 1800.00 | 1.260 | 7.730 | 1798.86 | 19.18 | 5.00 | -38.85 | 1705537.95 | 14289014.86 | 39°20'55.660"N | 80°46'10.724"W | 39.17 | 277.330 | 0.29 | 0.29 | -1.42 | |
| 1900.00 | 0.930 | 18.450 | 1898.84 | 20.75 | 6.86 | -38.45 | 1705538.36 | 14289016.71 | 39°20'55.679"N | 80°46'10.719"W | 39.05 | 280.112 | 0.39 | -0.33 | 10.72 | |
| 2000.00 | 0.960 | 99.480 | 1998.83 | 20.93 | 7.49 | -37.36 | 1705539.44 | 14289017.35 | 39°20'55.685"N | 80°46'10.705"W | 38.11 | 281.333 | 1.23 | 0.03 | 81.03 | |
| 2100.00 | 1.430 | 112.270 | 2098.81 | 19.62 | 5.88 | -35.38 | 1705541.42 | 14289016.74 | 39°20'55.679"N | 80°46'10.680"W | 36.05 | 281.000 | 0.54 | 0.47 | 12.79 | |
| 2200.00 | 0.350 | 37.940 | 2198.80 | 18.90 | 6.65 | -34.04 | 1705542.76 | 14289016.50 | 39°20'55.677"N | 80°46'10.663"W | 34.68 | 281.047 | 1.38 | -1.08 | -74.33 | |
| 2300.00 | 0.320 | 326.670 | 2298.80 | 19.33 | 7.12 | -34.01 | 1705542.80 | 14289016.98 | 39°20'55.681"N | 80°46'10.663"W | 34.74 | 281.825 | 0.39 | -0.03 | -71.27 | |
| 2400.00 | 0.430 | 297.990 | 2398.80 | 19.89 | 7.53 | -34.49 | 1705542.31 | 14289017.39 | 39°20'55.685"N | 80°46'10.669"W | 35.30 | 282.315 | 0.21 | 0.11 | -28.68 | |
| 2500.00 | 0.520 | 298.120 | 2498.79 | 20.53 | 7.92 | -35.22 | 1705541.58 | 14289017.78 | 39°20'55.689"N | 80°46'10.678"W | 36.10 | 282.672 | 0.09 | 0.09 | 0.13 | |
| 2600.00 | 0.610 | 308.500 | 2598.79 | 21.34 | 8.46 | -36.04 | 1705540.76 | 14289018.32 | 39°20'55.695"N | 80°46'10.688"W | 37.02 | 283.218 | 0.14 | 0.09 | 10.38 | |
| 2700.00 | 0.630 | 310.110 | 2698.78 | 22.29 | 9.15 | -36.88 | 1705539.93 | 14289019.01 | 39°20'55.701"N | 80°46'10.699"W | 37.99 | 283.936 | 0.03 | 0.02 | 1.61 | |
| 2800.00 | 1.810 | 208.150 | 2798.77 | 21.76 | 8.11 | -38.04 | 1705538.76 | 14289017.97 | 39°20'55.691"N | 80°46'10.714"W | 38.90 | 282.037 | 2.04 | 1.18 | -101.96 | |



Actual Wellpath Report

Manzarek Unit 1H AWP Proj: 14020'

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| REFERENCE WELLPATH IDENTIFICATION | | | |
|-----------------------------------|------------------------------|----------|----------------------|
| Operator | ANTERO RESOURCES CORPORATION | Slot | Slot #04 |
| Area | Doddridge Co., WV | Well | Manzarek Unit 1H |
| Field | Doddridge | Wellbore | Manzarek Unit 1H AWB |
| Facility | Yvonne Pad | | |

| WELLPATH DATA (165 stations) | | | | | | | | | | | | | | | | |
|------------------------------|--------------------|----------------|-------------|-------------------|---------------|--------------|----------------------|-----------------------|----------------|----------------|----------------------|--------------------|------------------|-------------------------|------------------------|----------|
| MD [ft] | Inclination [°] | Azimuth [°] | TVD [ft] | Vert Sect [ft] | North [ft] | East [ft] | Grid East [US ft] | Grid North [US ft] | Latitude | Longitude | Closure Dist [ft] | Closure Dir [°] | DLS [°/100ft] | Build Rate [°/100ft] | Turn Rate [°/100ft] | Comments |
| 2900.00 | 4.010 | 198.510 | 2898.63 | 18.09 | 3.40 | -39.90 | 1705536.91 | 14289013.26 | 39°20'55.645"N | 80°46'10.738"W | 40.04 | 274.875 | 2.25 | 2.20 | -9.64 | |
| 3000.00 | 5.250 | 193.210 | 2998.30 | 11.69 | -4.37 | -42.05 | 1705534.75 | 14289005.49 | 39°20'55.568"N | 80°46'10.765"W | 42.28 | 264.072 | 1.31 | 1.24 | -5.30 | |
| 3100.00 | 6.760 | 187.270 | 3097.75 | 2.82 | -14.66 | -43.84 | 1705532.96 | 14288995.21 | 39°20'55.466"N | 80°46'10.789"W | 46.23 | 251.512 | 1.63 | 1.51 | -5.94 | |
| 3200.00 | 8.160 | 189.670 | 3196.90 | -8.36 | -27.49 | -45.78 | 1705531.03 | 14288982.38 | 39°20'55.339"N | 80°46'10.814"W | 53.40 | 239.012 | 1.43 | 1.40 | 2.40 | |
| 3300.00 | 9.100 | 193.250 | 3295.77 | -20.86 | -42.19 | -48.79 | 1705528.02 | 14288967.69 | 39°20'55.194"N | 80°46'10.852"W | 64.50 | 229.147 | 1.08 | 0.94 | 3.58 | |
| 3400.00 | 10.100 | 196.060 | 3394.37 | -34.23 | -58.31 | -53.02 | 1705523.79 | 14288951.57 | 39°20'55.035"N | 80°46'10.907"W | 78.82 | 222.280 | 1.10 | 1.00 | 2.81 | |
| 3500.00 | 11.300 | 199.830 | 3492.63 | -48.44 | -75.96 | -58.77 | 1705518.04 | 14288933.93 | 39°20'54.861"N | 80°46'10.981"W | 96.04 | 217.732 | 1.39 | 1.20 | 3.77 | |
| 3600.00 | 12.750 | 204.980 | 3590.44 | -63.27 | -95.18 | -66.76 | 1705510.06 | 14288914.72 | 39°20'54.671"N | 80°46'11.083"W | 116.25 | 215.046 | 1.80 | 1.45 | 5.15 | |
| 3700.00 | 13.490 | 208.910 | 3687.83 | -78.16 | -115.39 | -77.06 | 1705499.76 | 14288894.52 | 39°20'54.471"N | 80°46'11.215"W | 138.75 | 213.735 | 1.16 | 0.74 | 3.93 | |
| 3800.00 | 14.080 | 209.550 | 3784.95 | -93.09 | -136.18 | -88.69 | 1705488.13 | 14288873.73 | 39°20'54.266"N | 80°46'11.363"W | 162.52 | 213.076 | 0.61 | 0.59 | 0.64 | |
| 3900.00 | 14.140 | 207.920 | 3881.93 | -108.52 | -157.56 | -100.41 | 1705476.42 | 14288852.37 | 39°20'54.055"N | 80°46'11.513"W | 186.83 | 212.510 | 0.40 | 0.06 | -1.63 | |
| 4000.00 | 13.750 | 200.080 | 3978.99 | -125.21 | -179.51 | -110.21 | 1705466.62 | 14288830.42 | 39°20'53.839"N | 80°46'11.639"W | 210.65 | 211.548 | 1.93 | -0.39 | -7.84 | |
| 4100.00 | 13.890 | 195.020 | 4076.10 | -143.62 | -202.27 | -117.40 | 1705459.43 | 14288807.67 | 39°20'53.614"N | 80°46'11.731"W | 233.87 | 210.132 | 1.22 | 0.14 | -5.06 | |
| 4200.00 | 14.180 | 192.060 | 4173.12 | -163.36 | -225.84 | -123.07 | 1705453.76 | 14288784.11 | 39°20'53.381"N | 80°46'11.804"W | 257.20 | 208.589 | 0.77 | 0.29 | -2.96 | |
| 4300.00 | 14.240 | 190.030 | 4270.06 | -183.94 | -249.93 | -127.78 | 1705449.07 | 14288760.03 | 39°20'53.143"N | 80°46'11.865"W | 280.70 | 207.078 | 0.50 | 0.06 | -2.03 | |
| 4400.00 | 13.890 | 191.120 | 4367.06 | -204.42 | -273.82 | -132.23 | 1705444.61 | 14288736.15 | 39°20'52.907"N | 80°46'11.922"W | 304.08 | 205.777 | 0.44 | -0.35 | 1.09 | |
| 4500.00 | 14.160 | 194.350 | 4464.08 | -224.34 | -297.45 | -137.58 | 1705439.27 | 14288712.53 | 39°20'52.674"N | 80°46'11.991"W | 327.72 | 204.822 | 0.83 | 0.27 | 3.23 | |
| 4600.00 | 14.910 | 198.140 | 4560.88 | -244.03 | -321.52 | -143.62 | 1705432.23 | 14288688.46 | 39°20'52.436"N | 80°46'12.081"W | 352.55 | 204.217 | 1.21 | 0.75 | 3.79 | |
| 4700.00 | 15.080 | 196.700 | 4657.48 | -264.02 | -346.21 | -152.36 | 1705424.49 | 14288663.79 | 39°20'52.192"N | 80°46'12.181"W | 378.25 | 203.753 | 0.41 | 0.17 | -1.44 | |
| 4800.00 | 14.540 | 190.680 | 4754.16 | -284.79 | -371.91 | -158.42 | 1705418.43 | 14288639.00 | 39°20'51.947"N | 80°46'12.259"W | 403.41 | 203.123 | 1.63 | -0.54 | -6.02 | |
| 4900.00 | 14.400 | 195.730 | 4850.99 | -305.18 | -395.31 | -164.12 | 1705412.73 | 14288614.71 | 39°20'51.707"N | 80°46'12.332"W | 428.03 | 202.547 | 1.27 | -0.14 | 5.05 | |
| 5000.00 | 12.980 | 198.410 | 4948.15 | -323.54 | -417.94 | -171.04 | 1705405.82 | 14288592.09 | 39°20'51.484"N | 80°46'12.421"W | 451.58 | 202.257 | 1.55 | -1.42 | 2.68 | |
| 5100.00 | 10.740 | 193.200 | 5046.01 | -339.71 | -437.67 | -176.72 | 1705400.14 | 14288572.37 | 39°20'51.289"N | 80°46'12.494"W | 472.00 | 201.987 | 2.48 | -2.24 | -5.21 | |
| 5200.00 | 10.150 | 187.100 | 5144.36 | -355.83 | -456.48 | -179.93 | 1705396.93 | 14288554.56 | 39°20'51.113"N | 80°46'12.535"W | 489.73 | 201.556 | 1.25 | -0.59 | -6.10 | |
| 5300.00 | 11.620 | 191.530 | 5242.56 | -371.13 | -474.40 | -183.03 | 1705393.83 | 14288535.95 | 39°20'50.929"N | 80°46'12.575"W | 508.20 | 201.110 | 1.69 | 1.47 | 4.43 | |
| 5400.00 | 12.730 | 198.760 | 5340.31 | -387.88 | -494.40 | -188.59 | 1705388.27 | 14288515.66 | 39°20'50.728"N | 80°46'12.647"W | 529.15 | 200.880 | 1.88 | 1.11 | 7.23 | |
| 5500.00 | 14.040 | 201.410 | 5437.59 | -405.84 | -516.12 | -196.56 | 1705380.30 | 14288493.94 | 39°20'50.514"N | 80°46'12.749"W | 552.29 | 200.849 | 1.45 | 1.31 | 2.65 | |
| 5600.00 | 15.900 | 201.210 | 5534.20 | -423.84 | -540.19 | -205.95 | 1705370.92 | 14288469.89 | 39°20'50.276"N | 80°46'12.869"W | 578.12 | 200.869 | 1.86 | 1.86 | -0.20 | |
| 5700.00 | 15.770 | 201.970 | 5630.40 | -443.61 | -565.56 | -215.99 | 1705360.89 | 14288444.52 | 39°20'50.026"N | 80°46'12.998"W | 605.40 | 200.902 | 0.24 | -0.13 | 0.76 | |
| 5800.00 | 15.800 | 199.710 | 5726.63 | -463.56 | -590.98 | -225.66 | 1705351.22 | 14288419.11 | 39°20'49.775"N | 80°46'13.122"W | 632.60 | 200.899 | 0.62 | 0.03 | -2.26 | |



Actual Wellpath Report

Manzarek Unit 1H AWP Proj: 14020'

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| REFERENCE WELLPATH IDENTIFICATION | | | |
|-----------------------------------|------------------------------|----------|----------------------|
| Operator | ANTERO RESOURCES CORPORATION | Slot | Slot #04 |
| Area | Doddridge Co., WV | Well | Manzarek Unit 1H |
| Field | Doddridge | Wellbore | Manzarek Unit 1H AWB |
| Facility | Yvonne Pad | | |

| WELLPATH DATA (165 stations) † = interpolated/extrapolated station | | | | | | | | | | | | | | | | |
|--|-------------|---------|---------|--------------|---------|---------|------------|-------------|----------------|----------------|--------------|------------|-----------|-------------------|-------------------|---|
| MD | Inclination | Azimuth | TVD | Vert | North | East | Grid East | Grid North | Latitude | Longitude | Closure | Closure | DLS | Build | Turn | Comments |
| [ft] | [°] | [°] | [ft] | Sect [ft] | [ft] | [ft] | [US ft] | [US ft] | | | Dist [ft] | Dir [°] | [°/100ft] | Rate [°/100ft] | Rate [°/100ft] | |
| 5900.00 | 16.800 | 198.630 | 5822.61 | -484.70 | -617.49 | -234.87 | 1705342.01 | 14288392.61 | 39°20'49.513"N | 80°46'13.240"W | 660.65 | 200.825 | 1.04 | 1.00 | -1.08 | |
| 5962.00 | 18.090 | 197.670 | 5881.76 | -498.91 | -635.15 | -240.66 | 1705336.23 | 14288374.96 | 39°20'49.338"N | 80°46'13.314"W | 679.22 | 200.751 | 2.13 | 2.08 | -1.55 | |
| 6123.00 | 19.180 | 193.450 | 6034.32 | -539.71 | -684.70 | -254.40 | 1705322.50 | 14288325.43 | 39°20'48.849"N | 80°46'13.490"W | 730.43 | 200.382 | 1.08 | 0.68 | -2.62 | BHI AT Curve <8-1/2"> (5962')(6123'-13995') |
| 6170.00 | 17.940 | 193.410 | 6078.88 | -551.91 | -699.25 | -257.87 | 1705319.02 | 14288310.89 | 39°20'48.705"N | 80°46'13.535"W | 745.28 | 200.243 | 2.64 | -2.64 | -0.09 | |
| 6217.00 | 15.980 | 198.820 | 6123.83 | -562.71 | -712.41 | -261.64 | 1705315.26 | 14288297.73 | 39°20'48.575"N | 80°46'13.583"W | 758.94 | 200.166 | 5.35 | -4.17 | 11.51 | |
| 6264.00 | 14.050 | 215.080 | 6169.25 | -570.71 | -723.21 | -267.01 | 1705309.89 | 14288286.93 | 39°20'48.469"N | 80°46'13.652"W | 770.93 | 200.264 | 9.82 | -4.11 | 34.60 | |
| 6311.00 | 13.360 | 233.080 | 6214.93 | -575.21 | -731.15 | -274.63 | 1705302.27 | 14288279.00 | 39°20'48.391"N | 80°46'13.749"W | 781.02 | 200.587 | 9.15 | -1.47 | 38.30 | |
| 6358.00 | 12.950 | 249.250 | 6260.71 | -576.50 | -736.28 | -283.90 | 1705293.00 | 14288273.88 | 39°20'48.340"N | 80°46'13.868"W | 789.11 | 201.086 | 7.85 | -0.87 | 34.40 | |
| 6406.00 | 13.380 | 263.940 | 6307.46 | -574.86 | -738.77 | -294.45 | 1705282.45 | 14288271.38 | 39°20'48.316"N | 80°46'14.002"W | 795.29 | 201.731 | 7.01 | 0.90 | 30.60 | |
| 6453.00 | 14.490 | 276.080 | 6353.09 | -570.60 | -738.72 | -305.71 | 1705271.20 | 14288271.43 | 39°20'48.316"N | 80°46'14.145"W | 799.48 | 202.482 | 6.64 | 2.36 | 25.83 | |
| 6500.00 | 16.140 | 289.360 | 6398.43 | -563.52 | -735.93 | -317.73 | 1705259.19 | 14288274.22 | 39°20'48.344"N | 80°46'14.298"W | 801.59 | 203.351 | 8.22 | 3.51 | 28.26 | |
| 6547.00 | 17.420 | 303.630 | 6443.45 | -553.39 | -729.87 | -329.75 | 1705247.17 | 14288280.28 | 39°20'48.405"N | 80°46'14.451"W | 800.90 | 204.313 | 9.15 | 2.72 | 30.36 | |
| 6595.00 | 20.450 | 313.880 | 6488.86 | -539.81 | -720.07 | -341.79 | 1705235.14 | 14288290.08 | 39°20'48.502"N | 80°46'14.604"W | 797.07 | 205.392 | 9.35 | 6.31 | 21.35 | |
| 6642.00 | 23.650 | 318.770 | 6532.42 | -523.41 | -707.28 | -353.92 | 1705223.01 | 14288302.86 | 39°20'48.628"N | 80°46'14.758"W | 790.89 | 206.583 | 7.84 | 6.81 | 10.40 | |
| 6689.00 | 26.880 | 324.150 | 6574.92 | -504.19 | -691.58 | -366.36 | 1705210.57 | 14288318.56 | 39°20'48.784"N | 80°46'14.916"W | 782.62 | 207.912 | 8.43 | 6.87 | 11.45 | |
| 6736.00 | 30.420 | 328.050 | 6616.17 | -482.14 | -672.86 | -378.89 | 1705198.05 | 14288337.27 | 39°20'48.969"N | 80°46'15.075"W | 772.20 | 209.384 | 8.51 | 7.53 | 8.30 | |
| 6783.00 | 34.370 | 329.740 | 6655.84 | -457.28 | -651.30 | -391.87 | 1705185.07 | 14288358.82 | 39°20'49.183"N | 80°46'15.239"W | 760.10 | 211.035 | 8.62 | 8.40 | 3.60 | |
| 6818.00† | 37.489 | 330.801 | 6684.18 | -436.94 | -635.46 | -402.05 | 1705174.90 | 14288376.65 | 39°20'49.359"N | 80°46'15.368"W | 750.28 | 212.403 | 9.09 | 8.91 | 3.03 | Middlesex: 6818' MD / 6684.2' TVD |
| 6830.00 | 38.560 | 331.130 | 6693.63 | -429.60 | -627.00 | -405.64 | 1705171.31 | 14288383.11 | 39°20'49.423"N | 80°46'15.414"W | 746.77 | 212.901 | 9.09 | 8.93 | 2.75 | |
| 6878.00 | 42.870 | 333.570 | 6730.01 | -398.45 | -599.26 | -426.14 | 1705156.82 | 14288410.84 | 39°20'49.698"N | 80°46'15.597"W | 731.87 | 215.034 | 9.57 | 8.98 | 5.08 | |
| 6925.00 | 46.830 | 335.910 | 6763.33 | -365.37 | -569.28 | -434.25 | 1705142.71 | 14288440.80 | 39°20'49.994"N | 80°46'15.776"W | 716.00 | 217.337 | 9.13 | 8.43 | 4.98 | |
| 6972.00 | 50.190 | 338.100 | 6794.46 | -330.18 | -536.88 | -447.99 | 1705124.98 | 14288473.20 | 39°20'50.315"N | 80°46'15.950"W | 699.24 | 219.843 | 7.95 | 7.15 | 4.66 | |
| 7002.00† | 52.245 | 339.767 | 6813.25 | -306.80 | -515.05 | -456.39 | 1705120.58 | 14288495.01 | 39°20'50.531"N | 80°46'16.056"W | 688.17 | 221.544 | 8.10 | 6.85 | 5.56 | Burkett: 7002' MD / 6813.3' TVD |
| 7019.00 | 53.420 | 340.670 | 6823.52 | -293.26 | -502.31 | -460.97 | 1705116.00 | 14288507.75 | 39°20'50.657"N | 80°46'16.114"W | 681.77 | 222.543 | 8.10 | 6.91 | 5.31 | |
| 7048.00† | 55.795 | 341.235 | 6840.32 | -269.65 | -479.96 | -468.69 | 1705108.29 | 14288530.09 | 39°20'50.878"N | 80°46'16.211"W | 670.84 | 224.319 | 8.34 | 8.19 | 1.95 | Tully: 7048' MD / 6840.3' TVD |
| 7066.00 | 57.270 | 341.570 | 6850.24 | -254.67 | -466.73 | -473.47 | 1705103.50 | 14288544.31 | 39°20'51.019"N | 80°46'16.272"W | 664.14 | 225.472 | 8.34 | 8.20 | 1.86 | |
| 7113.00 | 64.060 | 342.550 | 6873.26 | -213.82 | -426.77 | -486.08 | 1705090.91 | 14288583.26 | 39°20'51.404"N | 80°46'16.431"W | 646.84 | 228.717 | 14.56 | 14.45 | 2.09 | |
| 7153.00† | 68.273 | 342.909 | 6889.42 | -177.36 | -391.84 | -496.93 | 1705080.05 | 14288618.18 | 39°20'51.750"N | 80°46'16.568"W | 632.83 | 231.744 | 10.56 | 10.53 | 0.90 | Marcellus POE: 7153' MD / 6889.4' TVD |
| 7160.00 | 69.010 | 342.970 | 6891.97 | -170.87 | -385.61 | -498.85 | 1705078.14 | 14288624.41 | 39°20'51.811"N | 80°46'16.592"W | 630.51 | 232.296 | 10.56 | 10.53 | 0.87 | |
| 7207.00 | 73.820 | 342.650 | 6906.94 | -126.49 | -343.06 | -512.01 | 1705064.98 | 14288666.94 | 39°20'52.232"N | 80°46'16.758"W | 616.32 | 236.177 | 10.25 | 10.23 | -0.68 | |



Actual Wellpath Report

Manzarek Unit 1H AWP Proj: 14020'

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| REFERENCE WELLPATH IDENTIFICATION | | | |
|-----------------------------------|------------------------------|----------|----------------------|
| Operator | ANTERO RESOURCES CORPORATION | Slot | Slot #04 |
| Area | Doddridge Co., WV | Well | Manzarek Unit 1H |
| Field | Doddridge | Wellbore | Manzarek Unit 1H AWP |
| Facility | Yvonne Pad | | |

| WELLPATH DATA (165 stations) | | | | | | | | | | | | | | | | |
|------------------------------|--------------------|----------------|-------------|-------------------|---------------|--------------|----------------------|-----------------------|----------------|----------------|----------------------|--------------------|------------------|-------------------------|------------------------|----------|
| MD [ft] | Inclination [°] | Azimuth [°] | TVD [ft] | Vert Sect [ft] | North [ft] | East [ft] | Grid East [US ft] | Grid North [US ft] | Latitude | Longitude | Closure Dist [ft] | Closure Dir [°] | DLS [°/100ft] | Build Rate [°/100ft] | Turn Rate [°/100ft] | Comments |
| 7254.00 | 78.700 | 342.690 | 6918.10 | -81.00 | -299.49 | -525.61 | 1705051.39 | 14288710.49 | 39°20'52.663"N | 80°46'16.930"W | 604.94 | 240.326 | 10.38 | 10.38 | 0.09 | |
| 7299.00 | 83.280 | 340.700 | 6925.15 | -36.66 | -257.31 | -539.56 | 1705037.44 | 14288752.65 | 39°20'53.080"N | 80°46'17.106"W | 597.78 | 244.504 | 11.07 | 10.18 | -4.42 | |
| 7348.00 | 88.920 | 340.620 | 6928.48 | 12.16 | -211.20 | -555.75 | 1705021.26 | 14288798.74 | 39°20'53.537"N | 80°46'17.311"W | 594.53 | 249.192 | 11.51 | 11.51 | -0.16 | |
| 7442.00 | 89.910 | 332.320 | 6929.44 | 106.04 | -125.10 | -593.24 | 1704983.78 | 14288884.81 | 39°20'54.388"N | 80°46'17.785"W | 606.29 | 258.092 | 8.89 | 1.05 | -8.83 | |
| 7537.00 | 89.910 | 331.060 | 6929.59 | 200.45 | -41.46 | -638.29 | 1704938.75 | 14288968.42 | 39°20'55.216"N | 80°46'18.356"W | 639.64 | 266.283 | 1.33 | 0.00 | -1.33 | |
| 7631.00 | 89.970 | 331.280 | 6929.69 | 293.78 | 40.89 | -683.62 | 1704893.44 | 14289050.73 | 39°20'56.031"N | 80°46'18.931"W | 684.84 | 273.423 | 0.24 | 0.06 | 0.23 | |
| 7725.00 | 89.140 | 331.000 | 6930.42 | 387.10 | 123.21 | -728.99 | 1704848.09 | 14289133.02 | 39°20'56.846"N | 80°46'19.505"W | 739.33 | 279.593 | 0.93 | -0.88 | -0.30 | |
| 7819.00 | 89.540 | 338.880 | 6931.50 | 480.89 | 208.29 | -768.77 | 1704808.32 | 14289218.07 | 39°20'57.688"N | 80°46'20.009"W | 796.49 | 285.160 | 8.39 | 0.43 | 8.38 | |
| 7914.00 | 90.710 | 342.240 | 6931.30 | 575.78 | 297.86 | -800.38 | 1704776.72 | 14289307.60 | 39°20'58.574"N | 80°46'20.409"W | 854.01 | 290.412 | 3.75 | 1.23 | 3.54 | |
| 8008.00 | 90.280 | 338.350 | 6930.48 | 669.68 | 386.33 | -832.07 | 1704745.05 | 14289396.04 | 39°20'59.449"N | 80°46'20.809"W | 917.39 | 294.906 | 4.16 | -0.46 | -4.14 | |
| 8103.00 | 90.310 | 343.920 | 6929.99 | 764.50 | 476.19 | -862.78 | 1704714.36 | 14289485.86 | 39°21'00.338"N | 80°46'21.197"W | 985.47 | 298.896 | 5.86 | 0.03 | 5.86 | |
| 8197.00 | 90.000 | 353.950 | 6929.74 | 856.68 | 568.33 | -880.79 | 1704696.35 | 14289577.96 | 39°21'01.249"N | 80°46'21.424"W | 1048.23 | 302.832 | 10.68 | -0.33 | 10.67 | |
| 8292.00 | 90.280 | 349.670 | 6929.51 | 948.92 | 662.34 | -894.32 | 1704682.82 | 14289671.93 | 39°21'02.179"N | 80°46'21.593"W | 1112.88 | 306.524 | 4.51 | 0.29 | -4.51 | |
| 8386.00 | 89.970 | 337.900 | 6929.30 | 1042.28 | 752.44 | -920.53 | 1704656.63 | 14289762.00 | 39°21'03.070"N | 80°46'21.923"W | 1188.92 | 309.263 | 12.53 | -0.33 | -12.52 | |
| 8480.00 | 89.850 | 336.890 | 6929.45 | 1136.28 | 839.22 | -956.66 | 1704620.51 | 14289848.74 | 39°21'03.928"N | 80°46'22.381"W | 1272.59 | 311.258 | 1.08 | -0.13 | -1.07 | |
| 8575.00 | 89.850 | 338.310 | 6929.70 | 1231.27 | 927.04 | -992.86 | 1704584.33 | 14289936.54 | 39°21'04.797"N | 80°46'22.839"W | 1358.37 | 313.037 | 1.49 | 0.00 | 1.49 | |
| 8669.00 | 89.690 | 331.100 | 6930.07 | 1325.05 | 1011.98 | -1033.00 | 1704544.20 | 14290021.43 | 39°21'05.638"N | 80°46'23.347"W | 1446.09 | 314.411 | 7.67 | -0.17 | -7.67 | |
| 8764.00 | 89.780 | 331.840 | 6930.51 | 1419.43 | 1095.44 | -1078.37 | 1704498.85 | 14290104.86 | 39°21'06.464"N | 80°46'23.922"W | 1537.16 | 315.450 | 0.78 | 0.09 | 0.78 | |
| 8858.00 | 89.820 | 335.490 | 6930.84 | 1513.14 | 1179.67 | -1120.06 | 1704457.17 | 14290189.06 | 39°21'07.297"N | 80°46'24.450"W | 1626.70 | 316.485 | 3.88 | 0.04 | 3.88 | |
| 8952.00 | 89.780 | 334.530 | 6931.17 | 1607.01 | 1264.87 | -1159.77 | 1704417.48 | 14290274.22 | 39°21'08.140"N | 80°46'24.953"W | 1716.09 | 317.482 | 1.02 | -0.04 | -1.02 | |
| 9047.00 | 90.030 | 337.720 | 6931.33 | 1701.95 | 1351.72 | -1198.22 | 1704379.05 | 14290361.05 | 39°21'09.000"N | 80°46'25.439"W | 1806.35 | 318.445 | 3.37 | 0.26 | 3.36 | |
| 9141.00 | 90.550 | 338.070 | 6930.85 | 1795.94 | 1438.81 | -1233.59 | 1704343.69 | 14290448.10 | 39°21'09.861"N | 80°46'25.887"W | 1895.24 | 319.391 | 0.67 | 0.55 | 0.37 | |
| 9236.00 | 90.090 | 338.060 | 6930.32 | 1890.94 | 1526.94 | -1269.08 | 1704308.22 | 14290536.19 | 39°21'10.733"N | 80°46'26.336"W | 1985.47 | 320.269 | 0.48 | -0.48 | -0.01 | |
| 9330.00 | 90.250 | 336.910 | 6930.04 | 1984.94 | 1613.77 | -1305.07 | 1704272.24 | 14290622.99 | 39°21'11.592"N | 80°46'26.791"W | 2075.44 | 321.037 | 1.24 | 0.17 | -1.22 | |
| 9424.00 | 90.090 | 335.230 | 6929.75 | 2078.88 | 1699.89 | -1343.20 | 1704234.13 | 14290708.87 | 39°21'12.443"N | 80°46'27.274"W | 2166.36 | 321.682 | 1.80 | -0.17 | -1.79 | |
| 9518.00 | 90.250 | 336.320 | 6929.48 | 2172.80 | 1785.41 | -1381.77 | 1704195.57 | 14290794.56 | 39°21'13.291"N | 80°46'27.762"W | 2257.64 | 322.263 | 1.17 | 0.17 | 1.16 | |
| 9613.00 | 89.940 | 337.170 | 6929.33 | 2267.78 | 1872.69 | -1419.27 | 1704158.08 | 14290881.80 | 39°21'14.154"N | 80°46'28.237"W | 2349.74 | 322.842 | 0.95 | -0.33 | 0.89 | |
| 9707.00 | 90.120 | 338.010 | 6929.28 | 2361.78 | 1959.59 | -1455.11 | 1704122.26 | 14290968.67 | 39°21'15.014"N | 80°46'28.690"W | 2440.76 | 323.404 | 0.91 | 0.19 | 0.89 | |
| 9801.00 | 89.880 | 337.460 | 6929.28 | 2455.77 | 2046.58 | -1490.73 | 1704086.66 | 14291055.63 | 39°21'15.875"N | 80°46'29.141"W | 2531.94 | 323.930 | 0.64 | -0.26 | -0.59 | |
| 9895.00 | 89.850 | 334.050 | 6929.50 | 2549.69 | 2132.27 | -1529.32 | 1704048.08 | 14291141.29 | 39°21'16.723"N | 80°46'29.629"W | 2624.01 | 324.351 | 3.63 | -0.03 | -3.63 | |



Actual Wellpath Report

Manzarek Unit 1H AWP Proj: 14020'

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| REFERENCE WELLPATH IDENTIFICATION | | | |
|-----------------------------------|------------------------------|----------|----------------------|
| Operator | ANTERO RESOURCES CORPORATION | Slot | Slot #04 |
| Area | Doddridge Co., WV | Well | Manzarek Unit 1H |
| Field | Doddridge | Wellbore | Manzarek Unit 1H AWB |
| Facility | Yvonne Pad | | |

| WELLPATH DATA (165 stations) | | | | | | | | | | | | | | | | |
|------------------------------|--------------------|----------------|-------------|-------------------|---------------|--------------|----------------------|-----------------------|----------------|----------------|----------------------|--------------------|------------------|-------------------------|------------------------|----------|
| MD [ft] | Inclination [°] | Azimuth [°] | TVD [ft] | Vert Sect [ft] | North [ft] | East [ft] | Grid East [US ft] | Grid North [US ft] | Latitude | Longitude | Closure Dist [ft] | Closure Dir [°] | DLS [°/100ft] | Build Rate [°/100ft] | Turn Rate [°/100ft] | Comments |
| 9990.00 | 90.280 | 336.370 | 6929.39 | 2644.57 | 2218.51 | -1569.15 | 1704008.26 | 14291227.49 | 39°21'17.576"N | 80°46'30.134"W | 2717.36 | 324.728 | 2.48 | 0.45 | 2.44 | |
| 10084.00 | 90.150 | 340.540 | 6929.04 | 2738.54 | 2305.93 | -1603.66 | 1703973.76 | 14291314.87 | 39°21'18.441"N | 80°46'30.570"W | 2808.74 | 325.183 | 4.44 | -0.14 | 4.44 | |
| 10178.00 | 90.180 | 333.200 | 6928.77 | 2832.46 | 2392.31 | -1640.56 | 1703936.88 | 14291401.22 | 39°21'19.295"N | 80°46'31.037"W | 2900.79 | 325.559 | 7.81 | 0.03 | -7.81 | |
| 10273.00 | 90.120 | 332.290 | 6928.52 | 2927.05 | 2476.76 | -1684.07 | 1703893.39 | 14291485.64 | 39°21'20.131"N | 80°46'31.588"W | 2995.07 | 325.786 | 0.96 | -0.06 | -0.96 | |
| 10367.00 | 90.220 | 336.610 | 6928.24 | 3020.85 | 2561.55 | -1724.60 | 1703852.88 | 14291570.39 | 39°21'20.970"N | 80°46'32.102"W | 3088.01 | 326.049 | 4.60 | 0.11 | 4.60 | |
| 10462.00 | 90.250 | 339.750 | 6927.85 | 3115.84 | 2649.73 | -1759.90 | 1703817.58 | 14291658.54 | 39°21'21.843"N | 80°46'32.548"W | 3180.93 | 326.409 | 3.31 | 0.03 | 3.31 | |
| 10556.00 | 90.180 | 340.170 | 6927.50 | 3209.78 | 2738.04 | -1792.12 | 1703785.39 | 14291746.81 | 39°21'22.716"N | 80°46'32.956"W | 3272.39 | 326.794 | 0.45 | -0.07 | 0.45 | |
| 10650.00 | 90.150 | 338.490 | 6927.23 | 3303.75 | 2825.98 | -1825.30 | 1703752.22 | 14291834.72 | 39°21'23.586"N | 80°46'33.375"W | 3364.21 | 327.142 | 1.79 | -0.03 | -1.79 | |
| 10744.00 | 90.400 | 338.530 | 6926.78 | 3397.75 | 2913.45 | -1859.73 | 1703717.80 | 14291922.15 | 39°21'24.452"N | 80°46'33.811"W | 3456.41 | 327.449 | 0.27 | 0.27 | 0.04 | |
| 10838.00 | 90.430 | 340.590 | 6926.09 | 3491.71 | 3001.52 | -1892.56 | 1703684.99 | 14292010.19 | 39°21'25.323"N | 80°46'34.226"W | 3548.37 | 327.767 | 2.19 | 0.03 | 2.19 | |
| 10932.00 | 90.400 | 344.020 | 6925.41 | 3585.43 | 3091.06 | -1921.12 | 1703656.43 | 14292099.69 | 39°21'26.208"N | 80°46'34.587"W | 3639.42 | 328.139 | 3.65 | -0.03 | 3.65 | |
| 11027.00 | 90.400 | 338.680 | 6924.75 | 3680.23 | 3181.04 | -1951.49 | 1703626.08 | 14292189.63 | 39°21'27.099"N | 80°46'34.971"W | 3731.93 | 328.472 | 5.62 | 0.00 | -5.62 | |
| 11121.00 | 90.400 | 336.340 | 6924.09 | 3774.22 | 3267.88 | -1987.44 | 1703590.14 | 14292276.44 | 39°21'27.958"N | 80°46'35.426"W | 3824.78 | 328.693 | 2.49 | 0.00 | -2.49 | |
| 11216.00 | 90.370 | 334.090 | 6923.46 | 3869.10 | 3354.12 | -2027.27 | 1703550.33 | 14292362.65 | 39°21'28.811"N | 80°46'35.930"W | 3919.18 | 328.851 | 2.37 | -0.03 | -2.37 | |
| 11310.00 | 90.250 | 331.820 | 6922.95 | 3962.72 | 3437.84 | -2070.00 | 1703507.61 | 14292446.33 | 39°21'29.640"N | 80°46'36.471"W | 4012.93 | 328.947 | 2.42 | -0.13 | -2.41 | |
| 11404.00 | 90.520 | 338.630 | 6922.31 | 4056.55 | 3523.13 | -2109.37 | 1703468.26 | 14292531.59 | 39°21'30.484"N | 80°46'36.970"W | 4106.32 | 329.090 | 7.25 | 0.29 | 7.24 | |
| 11499.00 | 90.520 | 346.200 | 6921.45 | 4151.20 | 3613.62 | -2138.05 | 1703439.59 | 14292622.05 | 39°21'31.379"N | 80°46'37.332"W | 4198.75 | 329.389 | 7.97 | 0.00 | 7.97 | |
| 11593.00 | 91.420 | 348.560 | 6919.86 | 4243.93 | 3705.33 | -2158.58 | 1703419.07 | 14292713.72 | 39°21'32.285"N | 80°46'37.591"W | 4288.24 | 329.777 | 2.69 | 0.96 | 2.51 | |
| 11688.00 | 90.580 | 340.610 | 6918.20 | 4336.21 | 3796.83 | -2183.81 | 1703393.85 | 14292805.18 | 39°21'33.190"N | 80°46'37.909"W | 4380.06 | 330.094 | 8.41 | -0.88 | -8.37 | |
| 11782.00 | 90.460 | 337.600 | 6917.35 | 4432.18 | 3884.63 | -2217.33 | 1703360.34 | 14292892.95 | 39°21'34.059"N | 80°46'38.333"W | 4472.91 | 330.282 | 3.20 | -0.13 | -3.20 | |
| 11876.00 | 90.430 | 339.240 | 6916.62 | 4526.17 | 3972.04 | -2251.90 | 1703325.78 | 14292980.32 | 39°21'34.924"N | 80°46'38.770"W | 4565.98 | 330.449 | 1.74 | -0.03 | 1.74 | |
| 11971.00 | 90.580 | 339.950 | 6915.78 | 4621.13 | 4061.07 | -2285.02 | 1703292.67 | 14293069.32 | 39°21'35.805"N | 80°46'39.189"W | 4659.79 | 330.635 | 0.76 | 0.16 | 0.75 | |
| 12065.00 | 90.460 | 338.750 | 6914.92 | 4715.10 | 4149.03 | -2318.17 | 1703259.54 | 14293157.24 | 39°21'36.675"N | 80°46'39.608"W | 4752.72 | 330.807 | 1.28 | -0.13 | -1.28 | |
| 12159.00 | 90.680 | 335.210 | 6913.99 | 4809.07 | 4235.52 | -2351.92 | 1703222.80 | 14293243.70 | 39°21'37.530"N | 80°46'40.074"W | 4846.16 | 330.926 | 3.77 | 0.23 | -3.77 | |
| 12254.00 | 90.400 | 339.230 | 6913.09 | 4904.04 | 4323.09 | -2385.70 | 1703186.04 | 14293331.23 | 39°21'38.397"N | 80°46'40.539"W | 4940.58 | 331.047 | 4.24 | -0.29 | 4.23 | |
| 12348.00 | 90.430 | 335.610 | 6912.41 | 4998.01 | 4409.87 | -2422.78 | 1703149.97 | 14293417.98 | 39°21'39.255"N | 80°46'40.996"W | 5033.99 | 331.166 | 3.85 | 0.03 | -3.85 | |
| 12442.00 | 90.400 | 334.520 | 6911.73 | 5091.88 | 4495.10 | -2467.41 | 1703110.36 | 14293503.18 | 39°21'40.099"N | 80°46'41.498"W | 5127.77 | 331.237 | 1.16 | -0.03 | -1.16 | |
| 12537.00 | 90.490 | 336.030 | 6910.99 | 5186.77 | 4581.39 | -2507.14 | 1703070.64 | 14293589.43 | 39°21'40.953"N | 80°46'42.001"W | 5222.54 | 331.311 | 1.59 | 0.09 | 1.59 | |
| 12631.00 | 90.800 | 336.020 | 6909.94 | 5280.71 | 4667.27 | -2545.34 | 1703032.46 | 14293675.28 | 39°21'41.802"N | 80°46'42.484"W | 5316.22 | 331.394 | 0.33 | 0.33 | -0.01 | |
| 12726.00 | 90.680 | 339.060 | 6908.71 | 5375.68 | 4755.05 | -2581.62 | 1702996.19 | 14293763.02 | 39°21'42.671"N | 80°46'42.944"W | 5410.66 | 331.501 | 3.20 | -0.13 | 3.20 | |



Actual Wellpath Report
 Manzarek Unit 1H AWP Proj: 14020
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| Operator | Area | Field | Facility |
|------------------------------|-------------------|----------------------|------------|
| ANTERO RESOURCES CORPORATION | Doddridge Co., WV | Doddridge | Yvonne Pad |
| Slot #04 | Well | Wellbore | |
| | Manzarek Unit 1H | Manzarek Unit 1H AWB | |

| WELLPATH DATA (165 stations) | | | | | | | | | | | | | | | | | |
|------------------------------|-------------|---------|---------|-----------|---------|----------|------------|-------------|----------------|----------------|---------|--------------|-------|-----------|------------|-----------|---------------------------|
| MD | Inclination | Azimuth | TVD | Vert Sect | North | East | Grid East | Grid North | Latitude | Longitude | Closure | Dist Closure | Dir | DLS | Build Rate | Turn Rate | Comments |
| (ft) | (°) | (°) | (ft) | (ft) | (ft) | (ft) | (US ft) | (US ft) | (ft) | (ft) | (ft) | (ft) | (°) | (%/100ft) | (%/100ft) | (%/100ft) | |
| 12820.00 | 90.710 | 339.550 | 6907.57 | 5469.65 | 4842.98 | -2614.84 | 1702962.99 | 14293850.91 | 39°21'43.54"N | 80°46'43.364"W | 5503.80 | 331.634 | 0.52 | 0.03 | | | Projected MD at TD: 14020 |
| 12915.00 | 90.740 | 337.810 | 6906.37 | 5564.63 | 4931.46 | -2649.37 | 1702928.47 | 14293939.37 | 39°21'44.416"N | 80°46'43.801"W | 5598.08 | 331.754 | 1.83 | 0.03 | | | |
| 13009.00 | 90.620 | 338.740 | 6905.25 | 5658.63 | 5018.78 | -2684.17 | 1702893.69 | 14294026.65 | 39°21'45.280"N | 80°46'44.241"W | 5691.48 | 331.861 | 1.00 | -0.13 | | | |
| 13104.00 | 90.680 | 342.910 | 6904.17 | 5753.49 | 5108.48 | -2715.36 | 1702862.51 | 14294116.32 | 39°21'46.167"N | 80°46'44.635"W | 5785.31 | 332.008 | 4.39 | 0.06 | | | |
| 13198.00 | 90.740 | 340.050 | 6903.01 | 5847.30 | 5197.60 | -2745.21 | 1702832.67 | 14294205.40 | 39°21'47.049"N | 80°46'45.013"W | 5878.03 | 332.158 | 3.04 | 0.06 | -3.04 | | |
| 13293.00 | 90.800 | 338.700 | 6901.73 | 5942.26 | 5286.50 | -2778.67 | 1702799.22 | 14294294.26 | 39°21'47.928"N | 80°46'45.436"W | 5972.28 | 332.273 | 1.42 | 0.06 | -1.42 | | |
| 13387.00 | 90.920 | 339.760 | 6900.32 | 6036.23 | 5374.38 | -2812.00 | 1702765.90 | 14294382.11 | 39°21'48.798"N | 80°46'45.857"W | 6065.59 | 332.380 | 1.13 | 0.13 | 1.13 | | |
| 13481.00 | 90.490 | 337.340 | 6899.16 | 6130.21 | 5461.86 | -2846.37 | 1702731.55 | 14294469.55 | 39°21'49.663"N | 80°46'46.292"W | 6159.04 | 332.474 | 2.61 | -0.46 | -2.57 | | |
| 13576.00 | 90.280 | 338.960 | 6898.52 | 6225.20 | 5550.03 | -2881.73 | 1702696.21 | 14294557.68 | 39°21'50.535"N | 80°46'46.740"W | 6253.57 | 332.560 | 1.72 | -0.22 | 1.71 | | |
| 13670.00 | 89.880 | 337.390 | 6898.39 | 6319.20 | 5637.29 | -2916.67 | 1702661.28 | 14294644.91 | 39°21'51.398"N | 80°46'47.182"W | 6347.12 | 332.643 | 1.72 | -0.43 | -1.67 | | |
| 13765.00 | 89.820 | 345.820 | 6898.64 | 6413.93 | 5727.35 | -2946.62 | 1702631.34 | 14294734.94 | 39°21'52.289"N | 80°46'47.560"W | 6440.90 | 332.775 | 8.87 | -0.06 | 8.87 | | |
| 13859.00 | 90.220 | 346.300 | 6898.61 | 6507.00 | 5818.58 | -2969.27 | 1702608.70 | 14294826.13 | 39°21'53.192"N | 80°46'47.846"W | 6532.42 | 332.964 | 0.66 | 0.43 | 0.51 | | |
| 13953.00 | 90.370 | 337.150 | 6898.12 | 6600.71 | 5907.75 | -2998.71 | 1702579.27 | 14294915.26 | 39°21'54.074"N | 80°46'48.218"W | 6625.24 | 333.088 | 9.74 | 0.16 | -9.73 | | |
| 13995.00 | 90.030 | 332.960 | 6897.98 | 6642.64 | 5945.82 | -3016.42 | 1702561.56 | 14294953.32 | 39°21'54.450"N | 80°46'48.442"W | 6667.20 | 333.100 | 10.01 | -0.81 | -9.98 | | |
| 14020.00 | 90.030 | 332.960 | 6897.96 | 6667.54 | 5968.09 | -3027.79 | 1702550.20 | 14294975.58 | 39°21'54.671"N | 80°46'48.586"W | 6692.20 | 333.100 | | | | | |

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Actual Wellpath Report

Manzarek Unit 1H AWP Proj: 14020'
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| REFERENCE WELLPATH IDENTIFICATION | | | |
|-----------------------------------|------------------------------|----------|----------------------|
| Operator | ANTERO RESOURCES CORPORATION | Slot | Slot #04 |
| Area | Doddridge Co., WV | Well | Manzarek Unit 1H |
| Field | Doddridge | Wellbore | Manzarek Unit 1H AWB |
| Facility | Yvonne Pad | | |

| TARGETS | | | | | | | | |
|------------------------------------|----------|------------|-----------|-------------------|--------------------|----------------|----------------|-----------|
| Name | TVD [ft] | North [ft] | East [ft] | Grid East [US ft] | Grid North [US ft] | Latitude | Longitude | Shape |
| Manzarek Unit 1H POE Rev-2 | 6891.00 | -395.88 | -494.32 | 1705082.67 | 14288614.14 | 39°20'51.710"N | 80°46'16.535"W | point |
| Manzarek Unit 1H BHL Rev-2 | 6930.00 | 5958.33 | -3059.56 | 1702518.44 | 14294965.82 | 39°21'54.575"N | 80°46'48.991"W | point |
| Manzarek Unit 1H LP Rev-2 | 6930.00 | -220.62 | -565.07 | 1705011.94 | 14288789.33 | 39°20'53.444"N | 80°46'17.430"W | point |
| Manzarek Unit 1H BHL Plat | 6959.00 | 5750.61 | -2975.71 | 1702602.26 | 14294758.19 | 39°21'52.520"N | 80°46'47.930"W | point |
| Manzarek Unit 1H 20' L/R Hard Line | 7050.00 | 2868.85 | -1812.32 | 1703765.19 | 14291877.57 | 39°21'24.010"N | 80°46'33.209"W | rectangle |

| WELLPATH COMPOSITION - Ref Wellbore: Manzarek Unit 1H AWB Ref Wellpath: Manzarek Unit 1H AWP Proj: 14020' | | | | |
|--|-------------|---|---|----------------------|
| Start MD [ft] | End MD [ft] | Positional Uncertainty Model | Log Name/Comment | Wellbore |
| 25.00 | 5962.00 | Gyrodata standard - Drop gyro or Multi-shot | 01_Gyrodata MS Gyro <8-3/4">(100'-5962') | Manzarek Unit 1H AWB |
| 5962.00 | 13995.00 | BHI AutoTrak Curve (Short) | 02_BHI AT Curve <8-1/2">(5962')(6123'-13995') | Manzarek Unit 1H AWB |
| 13995.00 | 14020.00 | Blind Drilling (std) | Projection to bit | Manzarek Unit 1H AWB |

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 Environmental Protection



Actual Wellpath Report

Manzarek Unit 1H AWP Proj: 14020'

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| REFERENCE WELLPATH IDENTIFICATION | | | |
|-----------------------------------|------------------------------|----------|----------------------|
| Operator | ANTERO RESOURCES CORPORATION | Slot | Slot #04 |
| Area | Doddridge Co., WV | Well | Manzarek Unit 1H |
| Field | Doddridge | Wellbore | Manzarek Unit 1H AWB |
| Facility | Yvonne Pad | | |

COMMENTS

Wellpath general comments

API: 47-017-06775-0000

BHI Job #: 8249768

Rig: Patterson 343

Duration: 11/9/2016-11/12/2016

Gyrodatta MS Gyro <8-3/4"> (100'-5962')

BHI AT Curve <8-1/2"> (5962')(6123'-13995')

Middlesex: 6818' MD

Burkett: 7002' MD

Tully: 7048' MD

Marcellus POE: 7153' MD

Projected MD at TD: 14020'

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