

### REFERENCE WELLPATH IDENTIFICATION

|          |                           |          |                              |
|----------|---------------------------|----------|------------------------------|
| Operator | SOUTHWESTERN ENERGY       | Slot     | Slot 6H                      |
| Area     | Ohio County, WV           | Well     | Michael Ratcliffe OHI 6H     |
| Field    | Ohio                      | Wellbore | Michael Ratcliffe OHI 6H AWB |
| Facility | Michael Ratcliffe OHI Pad |          |                              |

### REPORT SETUP INFORMATION

|                     |                                    |                      |  |
|---------------------|------------------------------------|----------------------|--|
| Projection System   | NAD83 / UTM Zone 17 North, US feet | Software System      | WellArchitect® 5.1   |
| North Reference     | Grid                               | User                 | Atenjen  |
| Scale               | 0.999617                           | Report Generated     | 07/Mar/2019 at 11:07   |
| Convergence at slot | 0.28° East                         | Database/Source file | WA_MPL_EASTERNUS_Defn/Michael_Ratcliffe_OHI_6H_AWP_Proj_24236_.xml |

### WELLPATH LOCATION

|                       | Local coordinates |          | Grid coordinates |                 | Geographic coordinates |                |
|-----------------------|-------------------|----------|------------------|-----------------|------------------------|----------------|
|                       | North[ft]         | East[ft] | Easting[US ft]   | Northing[US ft] | Latitude               | Longitude      |
| Slot Location         | 61.75             | -126.88  | 1761392.45       | 14581092.81     | 40°08'54.492"N         | 80°34'01.502"W |
| Facility Reference Pt |                   |          | 1761519.28       | 14581031.09     | 40°08'53.876"N         | 80°33'59.872"W |
| Field Reference Pt    |                   |          | 0.00             | 0.00            | 0°00'00.000"           | 85°29'19.478"W |

### WELLPATH DATUM

|                          |                   |   |                   |
|--------------------------|-------------------|---|-------------------|
| Calculation method       | Minimum curvature | SDC 41 (KB) to Facility Vertical Datum        | 1307.30ft         |
| Horizontal Reference Pt  | Slot              | SDC 41 (KB) to Mean Sea Level                 | 1307.30ft         |
| Vertical Reference Pt    | SDC 41 (KB)       | SDC 41 (KB) to Ground Level at Slot (Slot 6H) | 26.00ft           |
| MD Reference Pt          | SDC 41 (KB)       | Section Origin                                | N 0.00, E 0.00 ft |
| Field Vertical Reference | Mean Sea Level    | Section Azimuth                               | 154.62°           |

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WV Department of  
Environmental Protection

# Actual Wellpath Report

Michael Ratcliffe OHI 6H AWP Proj: 24236'

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**BAKER HUGHES**  
a GE company

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| Operator | SOUTHWESTERN ENERGY       | Slot     | Slot 6H                      |
|----------|---------------------------|----------|------------------------------|
| Area     | Ohio County, WV           | Well     | Michael Ratcliffe OHI 6H     |
| Field    | Ohio                      | Wellbore | Michael Ratcliffe OHI 6H AWB |
| Facility | Michael Ratcliffe OHI Pad |          |                              |

## WELLPATH DATA (276 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] |
|---------|-----------------|-------------|----------|----------------|------------|-----------|-------------------|--------------------|----------------|----------------|-------------------|-----------------|---------------|----------------------|---------------------|
| 0.00    | 0.000           | 192.910     | 0.00     | 0.00           | 0.00       | 0.00      | 1761392.44        | 14581092.81        | 40°08'54.492"N | 80°34'01.502"W | 0.00              | 0.000           | 0.00          | 0.00                 | 0.00                |
| 26.00   | 0.000           | 192.910     | 26.00    | 0.00           | 0.00       | 0.00      | 1761392.44        | 14581092.81        | 40°08'54.492"N | 80°34'01.502"W | 0.00              | 0.000           | 0.00          | 0.00                 | 0.00                |
| 156.00  | 0.640           | 192.910     | 156.00   | 0.57           | -0.71      | -0.16     | 1761392.28        | 14581092.10        | 40°08'54.485"N | 80°34'01.504"W | 0.73              | 192.910         | 0.49          | 0.49                 | -128.53             |
| 218.00  | 0.700           | 195.670     | 217.99   | 1.13           | -1.41      | -0.34     | 1761392.10        | 14581091.40        | 40°08'54.478"N | 80°34'01.506"W | 1.45              | 193.630         | 0.11          | 0.10                 | 4.45                |
| 309.00  | 0.590           | 204.210     | 308.99   | 1.85           | -2.37      | -0.68     | 1761391.76        | 14581090.44        | 40°08'54.469"N | 80°34'01.511"W | 2.47              | 196.086         | 0.16          | -0.12                | 9.38                |
| 398.00  | 0.620           | 209.450     | 397.98   | 2.42           | -3.21      | -1.11     | 1761391.34        | 14581089.60        | 40°08'54.461"N | 80°34'01.516"W | 3.40              | 199.058         | 0.07          | 0.03                 | 5.89                |
| 490.00  | 0.640           | 235.130     | 489.98   | 2.80           | -3.94      | -1.78     | 1761390.67        | 14581088.88        | 40°08'54.453"N | 80°34'01.525"W | 4.32              | 204.270         | 0.31          | 0.02                 | 27.91               |
| 581.00  | 0.450           | 240.730     | 580.97   | 2.90           | -4.40      | -2.50     | 1761389.94        | 14581088.41        | 40°08'54.449"N | 80°34'01.535"W | 5.06              | 209.630         | 0.22          | -0.21                | 6.15                |
| 622.00  | 0.500           | 233.560     | 621.97   | 2.95           | -4.59      | -2.79     | 1761389.66        | 14581088.23        | 40°08'54.447"N | 80°34'01.538"W | 5.37              | 211.292         | 0.19          | 0.12                 | -17.49              |
| 698.00  | 0.440           | 251.380     | 697.97   | 2.98           | -4.88      | -3.33     | 1761389.11        | 14581087.94        | 40°08'54.444"N | 80°34'01.545"W | 5.91              | 214.336         | 0.21          | -0.08                | 23.45               |
| 789.00  | 0.720           | 266.450     | 788.96   | 2.72           | -5.02      | -4.23     | 1761388.21        | 14581087.79        | 40°08'54.443"N | 80°34'01.557"W | 6.57              | 220.117         | 0.35          | 0.31                 | 16.56               |
| 880.00  | 0.910           | 262.430     | 879.95   | 2.29           | -5.15      | -5.52     | 1761386.93        | 14581087.66        | 40°08'54.442"N | 80°34'01.573"W | 7.55              | 226.961         | 0.22          | 0.21                 | -4.42               |
| 970.00  | 0.380           | 327.960     | 969.95   | 1.78           | -5.00      | -6.39     | 1761386.06        | 14581087.82        | 40°08'54.443"N | 80°34'01.585"W | 8.11              | 231.967         | 0.92          | -0.59                | 72.81               |
| 1060.00 | 0.580           | 14.610      | 1059.95  | 1.13           | -4.30      | -6.43     | 1761386.02        | 14581088.51        | 40°08'54.450"N | 80°34'01.585"W | 7.74              | 236.216         | 0.47          | 0.22                 | 51.83               |
| 1151.00 | 0.970           | 23.720      | 1150.94  | 0.27           | -3.15      | -6.00     | 1761386.44        | 14581089.66        | 40°08'54.461"N | 80°34'01.580"W | 6.78              | 242.308         | 0.45          | 0.43                 | 10.01               |
| 1242.00 | 1.050           | 21.680      | 1241.92  | -0.80          | -1.67      | -5.39     | 1761387.06        | 14581091.14        | 40°08'54.476"N | 80°34'01.571"W | 5.64              | 252.763         | 0.10          | 0.09                 | -2.24               |
| 1335.00 | 0.790           | 50.540      | 1334.91  | -1.54          | -0.47      | -4.58     | 1761387.87        | 14581092.34        | 40°08'54.488"N | 80°34'01.561"W | 4.60              | 264.112         | 0.56          | -0.28                | 31.03               |
| 1427.00 | 0.870           | 65.800      | 1426.90  | -1.68          | 0.22       | -3.45     | 1761389.00        | 14581093.03        | 40°08'54.495"N | 80°34'01.546"W | 3.46              | 273.606         | 0.25          | 0.09                 | 16.59               |
| 1520.00 | 0.790           | 62.500      | 1519.89  | -1.68          | 0.80       | -2.24     | 1761390.21        | 14581093.61        | 40°08'54.500"N | 80°34'01.531"W | 2.38              | 289.741         | 0.10          | -0.09                | -3.55               |
| 1613.00 | 1.150           | 60.870      | 1612.88  | -1.77          | 1.55       | -0.85     | 1761391.59        | 14581094.36        | 40°08'54.508"N | 80°34'01.513"W | 1.77              | 331.212         | 0.39          | 0.39                 | -1.75               |
| 1704.00 | 0.470           | 57.790      | 1703.87  | -1.87          | 2.20       | 0.26      | 1761392.70        | 14581095.01        | 40°08'54.514"N | 80°34'01.499"W | 2.21              | 6.751           | 0.75          | -0.75                | -3.38               |
| 1797.00 | 0.260           | 69.170      | 1796.87  | -1.90          | 2.48       | 0.78      | 1761393.22        | 14581095.29        | 40°08'54.517"N | 80°34'01.492"W | 2.60              | 17.492          | 0.24          | -0.23                | 12.24               |
| 1890.00 | 0.230           | 79.840      | 1889.87  | -1.84          | 2.58       | 1.16      | 1761393.61        | 14581095.39        | 40°08'54.518"N | 80°34'01.487"W | 2.83              | 24.202          | 0.06          | -0.03                | 11.47               |
| 1983.00 | 0.310           | 47.800      | 1982.87  | -1.86          | 2.78       | 1.53      | 1761393.98        | 14581095.60        | 40°08'54.520"N | 80°34'01.482"W | 3.18              | 28.800          | 0.18          | 0.09                 | -34.45              |
| 2014.00 | 0.230           | 64.470      | 2013.87  | -1.88          | 2.87       | 1.65      | 1761394.09        | 14581095.68        | 40°08'54.521"N | 80°34'01.481"W | 3.31              | 29.902          | 0.36          | -0.26                | 53.77               |
| 2093.00 | 0.350           | 27.110      | 2092.87  | -2.03          | 3.15       | 1.90      | 1761394.35        | 14581095.96        | 40°08'54.523"N | 80°34'01.477"W | 3.68              | 31.119          | 0.28          | 0.15                 | -47.29              |
| 2186.00 | 0.860           | 35.820      | 2185.86  | -2.46          | 3.84       | 2.35      | 1761394.79        | 14581096.65        | 40°08'54.530"N | 80°34'01.472"W | 4.50              | 31.425          | 0.34          | 0.33                 | 9.37                |
| 2278.00 | 0.870           | 48.080      | 2277.86  | -2.89          | 4.60       | 2.97      | 1761395.41        | 14581097.41        | 40°08'54.538"N | 80°34'01.463"W | 5.48              | 32.817          | 0.13          | -0.10                | 7.89                |
| 2371.00 | 1.050           | 210.500     | 2370.85  | -2.58          | 4.21       | 2.85      | 1761395.30        | 14581097.02        | 40°08'54.534"N | 80°34'01.465"W | 5.08              | 34.135          | 1.73          | 0.52                 | 180.02              |
| 2463.00 | 1.070           | 211.560     | 2462.83  | -1.42          | 2.41       | 1.76      | 1761394.21        | 14581095.22        | 40°08'54.516"N | 80°34'01.479"W | 2.98              | 36.250          | 0.57          | 0.57                 | 1.15                |



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| Field    | Ohio                      | Wellbore | Michael Ratcliffe OHI 6H AWB |
| Facility | Michael Ratcliffe OHI Pad |          |                              |

## WELLPATH DATA (276 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] |
|---------|-----------------|-------------|----------|----------------|------------|-----------|-------------------|--------------------|----------------|----------------|-------------------|-----------------|---------------|----------------------|---------------------|
| 2556.00 | 1.400           | 214.040     | 2555.80  | -0.14          | 0.38       | 0.46      | 1761392.91        | 14581093.19        | 40°08'54.496"N | 80°34'01.496"W | 0.60              | 50.610          | 0.20          | -0.18                | 2.67                |
| 2649.00 | 1.260           | 205.050     | 2648.77  | 1.08           | -1.49      | -0.61     | 1761391.84        | 14581091.32        | 40°08'54.478"N | 80°34'01.510"W | 1.61              | 202.201         | 0.27          | -0.15                | -9.67               |
| 2741.00 | 1.040           | 200.980     | 2740.75  | 2.31           | -3.19      | -1.33     | 1761391.11        | 14581089.63        | 40°08'54.461"N | 80°34'01.519"W | 3.45              | 202.740         | 0.25          | -0.24                | -4.42               |
| 2833.00 | 1.190           | 214.030     | 2832.74  | 3.37           | -4.76      | -2.17     | 1761390.28        | 14581088.06        | 40°08'54.445"N | 80°34'01.530"W | 5.23              | 204.509         | 0.32          | 0.16                 | 14.18               |
| 2926.00 | 0.640           | 325.710     | 2925.73  | 3.35           | -5.13      | -3.00     | 1761389.44        | 14581087.69        | 40°08'54.442"N | 80°34'01.541"W | 5.94              | 210.344         | 1.66          | -0.59                | 120.09              |
| 3018.00 | 1.040           | 343.800     | 3017.72  | 2.01           | -3.90      | -3.52     | 1761388.92        | 14581088.91        | 40°08'54.454"N | 80°34'01.548"W | 5.26              | 222.092         | 0.52          | 0.43                 | 19.66               |
| 3111.00 | 0.960           | 346.700     | 3110.70  | 0.42           | -2.33      | -3.94     | 1761388.51        | 14581090.48        | 40°08'54.469"N | 80°34'01.553"W | 4.58              | 239.365         | 0.10          | -0.09                | 3.12                |
| 3204.00 | 1.000           | 332.750     | 3203.69  | -1.15          | -0.85      | -4.49     | 1761387.96        | 14581091.96        | 40°08'54.484"N | 80°34'01.560"W | 4.57              | 259.243         | 0.26          | 0.04                 | -15.00              |
| 3296.00 | 0.460           | 333.330     | 3295.68  | -2.33          | 0.19       | -5.02     | 1761387.42        | 14581093.00        | 40°08'54.494"N | 80°34'01.567"W | 5.03              | 272.176         | 0.59          | -0.59                | 0.63                |
| 3389.00 | 0.560           | 329.400     | 3388.68  | -3.15          | 0.92       | -5.42     | 1761387.03        | 14581093.73        | 40°08'54.502"N | 80°34'01.572"W | 5.50              | 279.585         | 0.11          | 0.11                 | -4.23               |
| 3482.00 | 0.720           | 343.190     | 3481.67  | -4.18          | 1.87       | -5.82     | 1761386.63        | 14581094.68        | 40°08'54.511"N | 80°34'01.577"W | 6.11              | 287.772         | 0.24          | 0.17                 | 14.83               |
| 3575.00 | 1.300           | 40.870      | 3574.66  | -5.18          | 3.22       | -5.30     | 1761387.15        | 14581096.03        | 40°08'54.524"N | 80°34'01.570"W | 6.20              | 301.303         | 1.18          | 0.62                 | 62.02               |
| 3668.00 | 1.230           | 44.480      | 3667.64  | -5.95          | 4.73       | -3.91     | 1761388.54        | 14581097.54        | 40°08'54.539"N | 80°34'01.552"W | 6.14              | 320.433         | 0.11          | -0.08                | 3.88                |
| 3760.00 | 1.150           | 27.320      | 3759.62  | -6.85          | 6.26       | -2.80     | 1761389.65        | 14581099.07        | 40°08'54.554"N | 80°34'01.538"W | 6.85              | 335.929         | 0.40          | -0.09                | -18.65              |
| 3853.00 | 1.190           | 69.300      | 3852.60  | -7.34          | 7.43       | -1.46     | 1761390.98        | 14581100.24        | 40°08'54.566"N | 80°34'01.520"W | 7.57              | 348.853         | 0.90          | 0.04                 | 45.14               |
| 3946.00 | 1.050           | 74.630      | 3945.58  | -7.11          | 8.00       | 0.26      | 1761392.71        | 14581100.80        | 40°08'54.571"N | 80°34'01.498"W | 8.00              | 1.871           | 0.19          | -0.15                | 5.73                |
| 4038.00 | 1.750           | 85.070      | 4037.56  | -6.47          | 8.34       | 2.47      | 1761394.92        | 14581101.15        | 40°08'54.575"N | 80°34'01.470"W | 8.70              | 16.520          | 0.81          | 0.76                 | 11.35               |
| 4131.00 | 2.730           | 85.950      | 4130.48  | -5.17          | 8.62       | 6.10      | 1761398.54        | 14581101.43        | 40°08'54.577"N | 80°34'01.423"W | 10.56             | 35.280          | 1.05          | 1.05                 | 0.95                |
| 4224.00 | 3.690           | 84.710      | 4223.34  | -3.34          | 9.05       | 11.29     | 1761403.73        | 14581101.86        | 40°08'54.581"N | 80°34'01.356"W | 14.47             | 51.275          | 1.03          | 1.03                 | -1.33               |
| 4316.00 | 4.100           | 94.200      | 4315.12  | -0.70          | 9.08       | 17.51     | 1761409.95        | 14581101.89        | 40°08'54.581"N | 80°34'01.276"W | 19.73             | 62.590          | 0.83          | 0.45                 | 10.32               |
| 4409.00 | 4.290           | 94.130      | 4407.88  | 2.66           | 8.59       | 24.30     | 1761416.74        | 14581101.40        | 40°08'54.576"N | 80°34'01.189"W | 25.77             | 70.534          | 0.20          | 0.20                 | -0.08               |
| 4502.00 | 4.950           | 92.530      | 4500.57  | 6.25           | 8.16       | 31.78     | 1761424.21        | 14581100.97        | 40°08'54.571"N | 80°34'01.092"W | 32.81             | 75.597          | 0.72          | 0.71                 | -1.72               |
| 4594.00 | 6.240           | 87.660      | 4592.13  | 10.06          | 8.19       | 40.74     | 1761433.17        | 14581101.00        | 40°08'54.571"N | 80°34'00.977"W | 41.55             | 78.633          | 1.49          | 1.40                 | -5.29               |
| 4687.00 | 17.140          | 91.520      | 4684.50  | 14.66          | 8.24       | 51.57     | 1761443.99        | 14581101.05        | 40°08'54.571"N | 80°34'00.837"W | 52.22             | 80.918          | 1.08          | 0.97                 | 4.15                |
| 4780.00 | 7.220           | 89.390      | 4776.77  | 20.60          | 7.14       | 63.11     | 1761455.53        | 14581099.95        | 40°08'54.560"N | 80°34'00.689"W | 63.51             | 83.549          | 1.06          | 0.09                 | 8.46                |
| 4872.00 | 8.220           | 87.000      | 4867.94  | 27.42          | 5.39       | 75.34     | 1761467.76        | 14581098.20        | 40°08'54.542"N | 80°34'00.531"W | 75.54             | 85.907          | 1.14          | 1.09                 | -2.60               |
| 4965.00 | 9.140           | 92.110      | 4959.87  | 34.39          | 4.31       | 89.32     | 1761481.73        | 14581097.12        | 40°08'54.531"N | 80°34'00.351"W | 89.43             | 87.238          | 1.27          | 0.99                 | -5.26               |
| 5057.00 | 9.630           | 88.140      | 5050.89  | 40.20          | 4.24       | 102.73    | 1761495.14        | 14581097.05        | 40°08'54.529"N | 80°34'00.179"W | 102.82            | 87.637          | 1.76          | -1.64                | -4.32               |
| 5150.00 | 9.670           | 92.990      | 5143.06  | 45.62          | 4.12       | 115.10    | 1761507.50        | 14581096.93        | 40°08'54.527"N | 80°34'00.020"W | 115.17            | 87.952          | 0.70          | 0.04                 | 5.22                |
| 5243.00 | 8.840           | 95.670      | 5235.10  | 52.25          | 3.09       | 128.41    | 1761520.80        | 14581095.90        | 40°08'54.517"N | 80°33'59.848"W | 128.45            | 88.624          | 1.32          | 1.26                 | 2.88                |



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|----------|---------------------------|----------|------------------------------|
| Area     | Ohio County, WV           | Well     | Michael Ratcliffe OHI 6H     |
| Field    | Ohio                      | Wellbore | Michael Ratcliffe OHI 6H AWB |
| Facility | Michael Ratcliffe OHI Pad |          |                              |

## WELLPATH DATA (276 stations)

| MD      | 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] |
|---------|-----------------|-------------|----------|----------------|------------|-----------|-------------------|--------------------|----------------|----------------|-------------------|-----------------|---------------|----------------------|---------------------|
| 5336.00 | 9.080           | 94.140      | 5326.96  | 59.55          | 1.85       | 142.84    | 1761535.23        | 14581094.66        | 40°08'54.504"N | 80°33'59.662"W | 142.85            | 89.258          | 0.36          | 0.26                 | -1.65               |
| 5429.00 | 7.900           | 92.240      | 5418.94  | 66.13          | 1.07       | 156.55    | 1761548.93        | 14581093.88        | 40°08'54.495"N | 80°33'59.486"W | 156.55            | 89.608          | 1.30          | -1.27                | -2.04               |
| 5521.00 | 7.750           | 96.460      | 5510.08  | 72.34          | 0.12       | 169.03    | 1761561.41        | 14581092.94        | 40°08'54.485"N | 80°33'59.325"W | 169.03            | 89.958          | 0.65          | -0.16                | 4.59                |
| 5614.00 | 7.630           | 95.620      | 5602.25  | 78.82          | -1.19      | 181.40    | 1761573.78        | 14581091.63        | 40°08'54.472"N | 80°33'59.166"W | 181.41            | 90.374          | 0.18          | -0.13                | -0.90               |
| 5707.00 | 7.570           | 91.210      | 5694.43  | 84.75          | -1.92      | 193.67    | 1761586.04        | 14581090.89        | 40°08'54.464"N | 80°33'59.008"W | 193.68            | 90.568          | 0.63          | -0.06                | -4.74               |
| 5784.00 | 7.100           | 96.920      | 5770.80  | 89.56          | -2.60      | 203.47    | 1761595.83        | 14581090.21        | 40°08'54.457"N | 80°33'58.882"W | 203.48            | 90.732          | 1.13          | -0.61                | 7.42                |
| 5830.00 | 10.270          | 123.730     | 5816.29  | 94.60          | -5.22      | 209.70    | 1761602.07        | 14581087.59        | 40°08'54.431"N | 80°33'58.802"W | 209.77            | 91.426          | 11.00         | 6.89                 | 58.28               |
| 5877.00 | 14.290          | 139.720     | 5862.22  | 103.81         | -11.98     | 216.94    | 1761609.30        | 14581080.84        | 40°08'54.363"N | 80°33'58.709"W | 217.27            | 93.160          | 11.13         | 8.55                 | 34.02               |
| 5923.00 | 18.820          | 148.210     | 5906.30  | 116.67         | -22.62     | 224.53    | 1761616.88        | 14581070.20        | 40°08'54.258"N | 80°33'58.612"W | 225.66            | 95.753          | 11.14         | 9.85                 | 18.46               |
| 5969.00 | 23.210          | 151.710     | 5949.24  | 133.11         | -36.92     | 232.73    | 1761625.09        | 14581055.91        | 40°08'54.116"N | 80°33'58.507"W | 235.64            | 99.014          | 9.92          | 9.54                 | 7.61                |
| 6016.00 | 26.150          | 153.450     | 5991.94  | 152.72         | -54.34     | 241.76    | 1761634.11        | 14581038.49        | 40°08'53.944"N | 80°33'58.392"W | 247.79            | 102.668         | 6.44          | 6.26                 | 3.70                |
| 6062.00 | 29.300          | 152.450     | 6032.65  | 174.11         | -73.39     | 251.50    | 1761643.84        | 14581019.45        | 40°08'53.755"N | 80°33'58.268"W | 261.99            | 106.269         | 6.92          | 6.85                 | -2.17               |
| 6109.00 | 33.790          | 150.850     | 6072.70  | 198.65         | -95.02     | 263.19    | 1761655.53        | 14580997.83        | 40°08'53.541"N | 80°33'58.119"W | 270.81            | 109.851         | 9.72          | 9.55                 | -3.40               |
| 6155.00 | 38.010          | 150.190     | 6109.95  | 225.55         | -118.49    | 276.46    | 1761668.80        | 14580974.37        | 40°08'53.308"N | 80°33'57.949"W | 300.79            | 113.199         | 9.21          | 9.17                 | -1.43               |
| 6201.00 | 42.580          | 149.260     | 6145.03  | 255.18         | -144.17    | 291.47    | 1761683.80        | 14580948.70        | 40°08'53.054"N | 80°33'57.758"W | 325.17            | 116.318         | 10.02         | 9.93                 | -2.02               |
| 6248.00 | 46.660          | 149.620     | 6178.47  | 288.05         | -172.59    | 308.25    | 1761700.57        | 14580920.29        | 40°08'52.772"N | 80°33'57.543"W | 353.27            | 119.245         | 8.70          | 8.68                 | 0.77                |
| 6294.00 | 51.190          | 149.600     | 6208.69  | 322.59         | -202.49    | 325.78    | 1761718.10        | 14580890.40        | 40°08'52.476"N | 80°33'57.319"W | 383.59            | 121.863         | 9.85          | 9.85                 | -0.04               |
| 6340.00 | 56.050          | 149.610     | 6235.97  | 359.47         | -234.43    | 344.52    | 1761736.83        | 14580858.47        | 40°08'52.159"N | 80°33'57.080"W | 416.71            | 124.234         | 10.57         | 10.57                | 0.02                |
| 6387.00 | 60.820          | 149.770     | 6260.56  | 399.36         | -268.99    | 364.72    | 1761757.02        | 14580823.92        | 40°08'51.817"N | 80°33'56.822"W | 453.19            | 126.410         | 10.15         | 10.15                | 0.34                |
| 6433.00 | 64.730          | 150.260     | 6281.60  | 440.12         | -304.42    | 385.16    | 1761777.45        | 14580788.51        | 40°08'51.466"N | 80°33'56.561"W | 490.93            | 128.322         | 8.55          | 8.50                 | 1.07                |
| 6479.00 | 68.810          | 151.240     | 6299.74  | 482.29         | -341.29    | 405.80    | 1761798.09        | 14580751.65        | 40°08'51.100"N | 80°33'56.298"W | 530.24            | 130.065         | 9.08          | 8.87                 | 2.13                |
| 6526.00 | 72.080          | 151.950     | 6315.47  | 526.51         | -380.24    | 426.86    | 1761819.14        | 14580712.72        | 40°08'50.714"N | 80°33'56.029"W | 571.66            | 131.694         | 7.10          | 6.96                 | 1.51                |
| 6572.00 | 73.270          | 152.450     | 6329.17  | 570.38         | -419.09    | 447.34    | 1761839.62        | 14580673.89        | 40°08'50.329"N | 80°33'55.768"W | 612.98            | 133.132         | 2.79          | 2.59                 | 1.09                |
| 6618.00 | 74.680          | 153.230     | 6341.87  | 614.57         | -458.42    | 467.52    | 1761859.79        | 14580634.56        | 40°08'49.940"N | 80°33'55.510"W | 654.78            | 134.437         | 3.47          | 3.07                 | 1.70                |
| 6665.00 | 78.540          | 154.000     | 6352.75  | 660.28         | -499.38    | 487.84    | 1761880.09        | 14580593.63        | 40°08'49.534"N | 80°33'55.251"W | 698.11            | 135.670         | 8.37          | 8.21                 | 1.64                |
| 6711.00 | 81.760          | 154.260     | 6360.62  | 705.59         | -540.24    | 507.43    | 1761899.68        | 14580552.78        | 40°08'49.129"N | 80°33'55.002"W | 741.18            | 136.793         | 7.18          | 7.00                 | 1.63                |
| 6757.00 | 86.680          | 154.940     | 6365.25  | 751.34         | -581.65    | 526.88    | 1761919.12        | 14580511.39        | 40°08'48.719"N | 80°33'54.754"W | 784.80            | 137.828         | 10.70         | 10.70                | 0.41                |
| 6804.00 | 89.730          | 155.670     | 6366.72  | 798.31         | -624.32    | 546.50    | 1761938.74        | 14580468.73        | 40°08'48.296"N | 80°33'54.504"W | 829.73            | 138.803         | 6.67          | 6.49                 | 1.55                |
| 6896.00 | 89.420          | 152.890     | 6367.40  | 890.29         | -707.06    | 586.71    | 1761978.93        | 14580386.03        | 40°08'47.477"N | 80°33'53.991"W | 918.78            | 140.314         | 3.47          | -0.34                | -3.46               |
| 6987.00 | 89.390          | 151.390     | 6368.35  | 981.18         | -787.32    | 629.59    | 1762021.79        | 14580305.80        | 40°08'46.682"N | 80°33'53.444"W | 1008.09           | 141.352         | 1.32          | -0.03                | -1.32               |



## REFERENCE WELLPATH IDENTIFICATION

|          |                           |          |                              |
|----------|---------------------------|----------|------------------------------|
| Operator | SOUTHWESTERN ENERGY       | Slot     | Slot 6H                      |
| Area     | Ohio County, WV           | Well     | Michael Ratcliffe OHI 6H     |
| Field    | Ohio                      | Wellbore | Michael Ratcliffe OHI 6H AWB |
| Facility | Michael Ratcliffe OHI Pad |          |                              |

## WELLPATH DATA (276 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] |
|---------|-----------------|-------------|----------|----------------|------------|-----------|-------------------|--------------------|----------------|----------------|-------------------|-----------------|---------------|----------------------|---------------------|
| 7078.00 | 89.270          | 151.770     | 6369.41  | 1072.04        | -867.31    | 672.96    | 1762065.15        | 14580225.84        | 40°08'45.889"N | 80°33'52.891"W | 1097.77           | 142.191         | 0.54          | -0.13                | 0.53                |
| 7171.00 | 89.050          | 152.280     | 6370.78  | 1164.94        | -949.43    | 716.58    | 1762108.75        | 14580143.75        | 40°08'45.075"N | 80°33'52.334"W | 1189.50           | 142.956         | 0.60          | -0.24                | 0.55                |
| 7262.00 | 89.640          | 153.910     | 6371.82  | 1255.90        | -1030.57   | 757.76    | 1762149.91        | 14580062.64        | 40°08'44.272"N | 80°33'51.809"W | 1279.17           | 143.674         | 1.90          | 0.65                 | 1.79                |
| 7352.00 | 89.670          | 153.800     | 6372.36  | 1345.89        | -1111.36   | 797.41    | 1762189.55        | 14579981.88        | 40°08'43.471"N | 80°33'51.304"W | 1367.84           | 144.340         | 0.13          | 0.03                 | -0.12               |
| 7445.00 | 89.490          | 154.210     | 6373.04  | 1438.88        | -1194.95   | 838.17    | 1762230.30        | 14579898.32        | 40°08'42.643"N | 80°33'50.784"W | 1459.60           | 144.953         | 0.48          | -0.19                | 0.44                |
| 7537.00 | 90.010          | 155.010     | 6373.44  | 1530.88        | -1278.06   | 877.62    | 1762269.73        | 14579815.24        | 40°08'41.820"N | 80°33'50.281"W | 1550.37           | 145.523         | 1.04          | 0.57                 | 0.87                |
| 7629.00 | 89.520          | 155.110     | 6373.82  | 1622.87        | -1361.48   | 916.41    | 1762308.51        | 14579731.85        | 40°08'40.994"N | 80°33'49.787"W | 1641.17           | 146.056         | 0.54          | -0.53                | 0.11                |
| 7722.00 | 89.550          | 154.580     | 6374.57  | 1715.87        | -1445.66   | 955.94    | 1762348.02        | 14579647.71        | 40°08'40.160"N | 80°33'49.283"W | 1733.14           | 146.525         | 0.57          | 0.03                 | -0.57               |
| 7814.00 | 89.520          | 154.270     | 6375.32  | 1807.86        | -1528.64   | 995.66    | 1762387.72        | 14579564.76        | 40°08'39.338"N | 80°33'48.777"W | 1824.30           | 146.922         | 0.34          | -0.03                | -0.34               |
| 7904.00 | 89.520          | 153.710     | 6376.08  | 1897.86        | -1609.52   | 1035.12   | 1762427.17        | 14579483.91        | 40°08'38.537"N | 80°33'48.274"W | 1913.65           | 147.254         | 0.62          | 0.00                 | -0.62               |
| 7996.00 | 89.550          | 153.820     | 6376.82  | 1989.84        | -1692.04   | 1075.79   | 1762467.82        | 14579401.42        | 40°08'37.720"N | 80°33'47.756"W | 2005.08           | 147.552         | 0.12          | 0.03                 | 0.12                |
| 8088.00 | 89.580          | 154.420     | 6377.52  | 2081.84        | -1774.81   | 1115.95   | 1762507.96        | 14579318.68        | 40°08'36.900"N | 80°33'47.244"W | 2096.50           | 147.840         | 0.65          | 0.03                 | 0.65                |
| 8181.00 | 89.580          | 154.820     | 6378.20  | 2174.83        | -1858.84   | 1155.81   | 1762547.81        | 14579234.69        | 40°08'36.067"N | 80°33'46.736"W | 2188.87           | 148.127         | 0.43          | 0.00                 | 0.43                |
| 8274.00 | 89.490          | 155.230     | 6378.96  | 2267.83        | -1943.14   | 1195.07   | 1762587.06        | 14579150.42        | 40°08'35.232"N | 80°33'46.236"W | 2281.22           | 148.408         | 0.45          | -0.10                | 0.44                |
| 8367.00 | 89.550          | 155.180     | 6379.74  | 2360.82        | -2027.56   | 1234.07   | 1762626.04        | 14579066.03        | 40°08'34.396"N | 80°33'45.739"W | 2373.59           | 148.673         | 0.08          | 0.06                 | -0.05               |
| 8459.00 | 89.920          | 156.580     | 6380.16  | 2452.79        | -2111.53   | 1271.67   | 1762663.62        | 14578982.10        | 40°08'33.565"N | 80°33'45.260"W | 2464.89           | 148.942         | 1.57          | 0.40                 | 1.52                |
| 8552.00 | 89.610          | 157.750     | 6380.54  | 2545.70        | -2197.23   | 1307.76   | 1762699.70        | 14578896.42        | 40°08'32.716"N | 80°33'44.801"W | 2556.97           | 149.240         | 1.30          | -0.33                | 1.26                |
| 8645.00 | 89.550          | 158.980     | 6381.22  | 2638.50        | -2283.68   | 1342.04   | 1762733.97        | 14578810.01        | 40°08'31.860"N | 80°33'44.365"W | 2648.82           | 149.559         | 1.32          | -0.06                | 1.32                |
| 8737.00 | 89.120          | 160.400     | 6382.29  | 2730.13        | -2369.95   | 1373.97   | 1762765.89        | 14578723.77        | 40°08'31.006"N | 80°33'43.959"W | 2739.43           | 149.897         | 1.61          | -0.47                | 1.54                |
| 8830.00 | 89.210          | 159.510     | 6383.65  | 2822.71        | -2457.31   | 1405.85   | 1762797.75        | 14578636.45        | 40°08'30.141"N | 80°33'43.554"W | 2831.04           | 150.226         | 0.96          | 0.10                 | -0.96               |
| 8923.00 | 89.180          | 157.910     | 6384.95  | 2915.47        | -2543.95   | 1439.61   | 1762831.50        | 14578549.84        | 40°08'29.283"N | 80°33'43.125"W | 2923.04           | 150.495         | 1.72          | -0.03                | -1.72               |
| 9015.00 | 89.180          | 156.760     | 6386.27  | 3007.35        | -2628.83   | 1475.06   | 1762866.93        | 14578464.99        | 40°08'28.443"N | 80°33'42.674"W | 3014.39           | 150.703         | 1.25          | 0.00                 | -1.25               |
| 9108.00 | 89.120          | 154.600     | 6387.65  | 3100.32        | -2713.57   | 1513.35   | 1762905.21        | 14578380.29        | 40°08'27.604"N | 80°33'42.186"W | 3107.04           | 150.852         | 2.32          | -0.06                | -2.32               |
| 9201.00 | 89.150          | 152.680     | 6389.06  | 3193.29        | -2796.88   | 1554.64   | 1762946.48        | 14578297.01        | 40°08'26.778"N | 80°33'41.660"W | 3199.91           | 150.933         | 2.06          | 0.03                 | -2.06               |
| 9294.00 | 89.150          | 152.580     | 6390.43  | 3286.22        | -2879.46   | 1597.39   | 1762989.22        | 14578214.46        | 40°08'25.960"N | 80°33'41.115"W | 3292.87           | 150.981         | 0.11          | 0.00                 | -0.11               |
| 9386.00 | 89.180          | 152.070     | 6391.78  | 3378.14        | -2960.93   | 1640.11   | 1763031.93        | 14578133.02        | 40°08'25.153"N | 80°33'40.570"W | 3384.83           | 151.017         | 0.56          | 0.03                 | -0.55               |
| 9479.00 | 89.240          | 152.440     | 6393.08  | 3471.05        | -3043.23   | 1683.40   | 1763075.20        | 14578050.76        | 40°08'24.338"N | 80°33'40.018"W | 3477.80           | 151.050         | 0.40          | 0.03                 | 0.40                |
| 9571.00 | 89.180          | 154.390     | 6394.37  | 3563.02        | -3125.49   | 1724.57   | 1763116.35        | 14577968.53        | 40°08'23.523"N | 80°33'39.493"W | 3569.71           | 151.111         | 2.12          | -0.03                | 2.12                |
| 9664.00 | 89.150          | 155.290     | 6395.73  | 3656.00        | -3209.83   | 1763.74   | 1763155.50        | 14577884.22        | 40°08'22.687"N | 80°33'38.994"W | 3662.48           | 151.212         | 1.51          | -0.03                | 1.51                |
| 9757.00 | 89.240          | 156.000     | 6397.04  | 3748.97        | -3294.74   | 1801.64   | 1763193.39        | 14577799.34        | 40°08'21.846"N | 80°33'38.511"W | 3755.16           | 151.329         | 0.35          | 0.10                 | 0.33                |

Environmental Protection  
Department of  
Gas



## REFERENCE WELLPATH IDENTIFICATION

| Operator | SOUTHWESTERN ENERGY       | Slot     | Slot 6H                      |
|----------|---------------------------|----------|------------------------------|
| Area     | Ohio County, WV           | Well     | Michael Ratcliffe OHI 6H     |
| Field    | Ohio                      | Wellbore | Michael Ratcliffe OHI 6H AWB |
| Facility | Michael Ratcliffe OHI Pad |          |                              |

## WELLPATH DATA (276 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] |
|----------|-----------------|-------------|----------|----------------|------------|-----------|-------------------|--------------------|----------------|----------------|-------------------|-----------------|---------------|----------------------|---------------------|
| 9850.00  | 89.270          | 155.480     | 6398.25  | 3841.94        | -3379.55   | 1839.78   | 1763231.51        | 14577714.56        | 40°08'21.006"N | 80°33'38.026"W | 3847.88           | 151.437         | 0.67          | 0.03                 | -0.67               |
| 9943.00  | 89.210          | 155.900     | 6399.48  | 3934.92        | -3464.30   | 1878.06   | 1763269.78        | 14577629.85        | 40°08'20.167"N | 80°33'37.538"W | 3940.62           | 151.537         | 0.46          | -0.06                | 0.45                |
| 10034.00 | 89.180          | 157.180     | 6400.76  | 4025.85        | -3547.77   | 1914.28   | 1763305.99        | 14577546.41        | 40°08'19.341"N | 80°33'37.077"W | 4031.27           | 151.650         | 1.41          | -0.03                | 1.41                |
| 10127.00 | 89.050          | 157.090     | 6402.19  | 4118.75        | -3633.45   | 1950.41   | 1763342.11        | 14577460.76        | 40°08'18.492"N | 80°33'36.617"W | 4123.84           | 151.773         | 0.17          | -0.14                | -0.10               |
| 10220.00 | 89.150          | 156.620     | 6403.66  | 4211.67        | -3718.95   | 1986.96   | 1763378.64        | 14577375.29        | 40°08'17.645"N | 80°33'36.152"W | 4216.47           | 151.885         | 0.52          | 0.11                 | -0.51               |
| 10312.00 | 89.120          | 156.420     | 6405.04  | 4303.61        | -3803.33   | 2023.61   | 1763415.28        | 14577290.95        | 40°08'16.810"N | 80°33'35.686"W | 4308.17           | 151.984         | 0.22          | -0.03                | -0.22               |
| 10405.00 | 89.090          | 156.160     | 6406.50  | 4396.56        | -3888.47   | 2061.01   | 1763452.66        | 14577205.84        | 40°08'15.967"N | 80°33'35.210"W | 4400.90           | 152.075         | 0.28          | -0.03                | -0.28               |
| 10497.00 | 89.150          | 156.270     | 6407.91  | 4488.51        | -3972.64   | 2098.10   | 1763489.74        | 14577121.70        | 40°08'15.133"N | 80°33'34.737"W | 4492.65           | 152.160         | 0.14          | 0.07                 | 0.12                |
| 10589.00 | 89.150          | 154.460     | 6409.27  | 4580.49        | -4056.26   | 2136.45   | 1763528.07        | 14577038.12        | 40°08'14.305"N | 80°33'34.249"W | 4584.50           | 152.224         | 1.97          | 0.00                 | -1.97               |
| 10682.00 | 89.180          | 153.410     | 6410.63  | 4673.47        | -4139.79   | 2177.31   | 1763568.91        | 14576954.62        | 40°08'13.477"N | 80°33'33.728"W | 4677.45           | 152.258         | 1.13          | 0.03                 | -1.13               |
| 10775.00 | 89.150          | 154.670     | 6411.99  | 4766.46        | -4223.39   | 2218.01   | 1763609.60        | 14576871.05        | 40°08'12.649"N | 80°33'33.210"W | 4770.39           | 152.293         | 1.36          | -0.03                | 1.35                |
| 10867.00 | 89.150          | 154.650     | 6413.35  | 4858.45        | -4306.53   | 2257.38   | 1763648.96        | 14576787.94        | 40°08'11.826"N | 80°33'32.708"W | 4862.30           | 152.338         | 0.02          | 0.00                 | -0.02               |
| 10960.00 | 89.300          | 154.680     | 6414.61  | 4951.44        | -4390.58   | 2297.17   | 1763688.73        | 14576703.92        | 40°08'10.993"N | 80°33'32.201"W | 4955.22           | 152.381         | 0.16          | 0.16                 | 0.03                |
| 11053.00 | 89.300          | 155.060     | 6415.74  | 5044.43        | -4474.77   | 2336.67   | 1763728.21        | 14576619.76        | 40°08'10.159"N | 80°33'31.698"W | 5048.13           | 152.427         | 0.41          | 0.00                 | 0.41                |
| 11144.00 | 89.180          | 153.390     | 6416.95  | 5135.42        | -4556.71   | 2376.23   | 1763767.76        | 14576537.86        | 40°08'09.348"N | 80°33'31.194"W | 5139.07           | 152.459         | 1.84          | -0.13                | -1.84               |
| 11237.00 | 89.180          | 153.550     | 6418.28  | 5228.39        | -4639.91   | 2417.77   | 1763809.28        | 14576454.69        | 40°08'08.523"N | 80°33'30.664"W | 5232.05           | 152.477         | 0.17          | 0.00                 | 0.17                |
| 11330.00 | 89.150          | 154.210     | 6419.64  | 5321.37        | -4723.40   | 2458.71   | 1763850.20        | 14576371.23        | 40°08'07.696"N | 80°33'30.143"W | 5325.01           | 152.501         | 0.71          | -0.03                | 0.71                |
| 11422.00 | 89.120          | 153.730     | 6421.03  | 5413.35        | -4806.06   | 2499.07   | 1763890.56        | 14576288.61        | 40°08'06.878"N | 80°33'29.628"W | 5416.97           | 152.526         | 0.52          | -0.03                | -0.52               |
| 11514.00 | 89.060          | 153.220     | 6422.49  | 5505.32        | -4888.36   | 2540.16   | 1763931.62        | 14576206.33        | 40°08'06.062"N | 80°33'29.104"W | 5508.95           | 152.542         | 0.56          | -0.07                | -0.55               |
| 11607.00 | 88.930          | 153.520     | 6424.12  | 5598.29        | -4971.48   | 2581.83   | 1763973.28        | 14576123.24        | 40°08'05.239"N | 80°33'28.573"W | 5601.92           | 152.556         | 0.35          | -0.14                | 0.32                |
| 11699.00 | 88.780          | 155.240     | 6425.96  | 5690.26        | -5054.42   | 2621.61   | 1764013.04        | 14576040.34        | 40°08'04.417"N | 80°33'28.066"W | 5693.85           | 152.585         | 1.88          | -0.16                | 1.87                |
| 11792.00 | 88.500          | 158.510     | 6428.17  | 5783.15        | -5139.91   | 2658.11   | 1764049.54        | 14575954.88        | 40°08'03.571"N | 80°33'27.602"W | 5786.56           | 152.654         | 3.53          | -0.30                | 3.52                |
| 11885.00 | 89.180          | 162.490     | 6430.05  | 5875.63        | -5227.54   | 2689.15   | 1764090.55        | 14575867.29        | 40°08'02.703"N | 80°33'27.208"W | 5878.66           | 152.778         | 4.34          | 0.73                 | 4.28                |
| 11978.00 | 89.790          | 165.310     | 6430.88  | 5967.39        | -5316.88   | 2714.93   | 1764106.33        | 14575777.98        | 40°08'01.819"N | 80°33'26.882"W | 5969.93           | 152.950         | 3.10          | 0.66                 | 3.03                |
| 12069.00 | 89.890          | 164.660     | 6431.14  | 6056.91        | -5404.77   | 2738.51   | 1764129.90        | 14575690.12        | 40°08'00.949"N | 80°33'26.584"W | 6058.96           | 153.129         | 0.72          | 0.11                 | -0.71               |
| 12162.00 | 89.820          | 163.030     | 6431.37  | 6148.70        | -5494.10   | 2764.38   | 1764155.76        | 14575600.83        | 40°08'00.065"N | 80°33'26.256"W | 6150.36           | 153.291         | 1.75          | -0.08                | -1.75               |
| 12255.00 | 89.950          | 161.580     | 6431.56  | 6240.86        | -5582.69   | 2792.65   | 1764184.02        | 14575512.27        | 40°07'59.188"N | 80°33'25.898"W | 6242.22           | 153.424         | 1.57          | 0.14                 | -1.56               |
| 12348.00 | 89.920          | 160.880     | 6431.67  | 6333.29        | -5670.62   | 2822.96   | 1764214.31        | 14575424.38        | 40°07'58.318"N | 80°33'25.514"W | 6334.43           | 153.535         | 1.29          | -0.03                | -1.29               |
| 12440.00 | 89.890          | 159.530     | 6431.82  | 6424.89        | -5757.04   | 2854.49   | 1764245.84        | 14575337.99        | 40°07'57.462"N | 80°33'25.113"W | 6425.86           | 153.627         | 0.92          | -0.03                | -0.92               |
| 12533.00 | 89.920          | 158.410     | 6431.97  | 6517.62        | -5843.85   | 2887.86   | 1764279.20        | 14575251.22        | 40°07'56.603"N | 80°33'24.689"W | 6518.46           | 153.703         | 1.20          | 0.03                 | -1.20               |

SWN  
Southwestern Energy  
WV Dept of Environmental Protection  
2019



## REFERENCE WELLPATH IDENTIFICATION

| Operator            | Slot     | Slot 6H                      |
|---------------------|----------|------------------------------|
| SOUTHWESTERN ENERGY | Well     | Michael Ratcliffe OHI 6H     |
| Area                | Wellbore | Michael Ratcliffe OHI 6H AWB |
| Field               |          |                              |
| Facility            |          |                              |

## WELLPATH DATA (276 stations)

| MD       | Inclination | Azimuth | TVD     | Vert. Sect | North    | East    | Grid East  | Grid North  | Latitude       | Longitude      | Closure Dist | Closure Dir | DLS       | Build Rate | Turn Rate |
|----------|-------------|---------|---------|------------|----------|---------|------------|-------------|----------------|----------------|--------------|-------------|-----------|------------|-----------|
| [ft]     | [°]         | [°]     | [ft]    | [ft]       | [ft]     | [ft]    | [US ft]    | [US ft]     | [°]            | [°]            | [ft]         | [°]         | [°/100ft] | [°/100ft]  | [°/100ft] |
| 12626.00 | 89.790      | 157.140 | 6432.21 | 6610.48    | -5929.93 | 2923.04 | 1764314.36 | 14575165.16 | 40°07'55.751"N | 80°33'24.242"W | 6611.22      | 153.760     | 1.37      | -0.14      | -1.37     |
| 12719.00 | 90.010      | 155.530 | 6432.37 | 6703.43    | -6015.11 | 2960.37 | 1764351.67 | 14575080.02 | 40°07'54.907"N | 80°33'23.767"W | 6704.13      | 153.796     | 1.75      | 0.24       | -1.73     |
| 12811.00 | 89.890      | 152.380 | 6432.45 | 6795.42    | -6097.76 | 3000.76 | 1764392.05 | 14574997.40 | 40°07'54.088"N | 80°33'23.252"W | 6796.12      | 153.798     | 3.43      | -0.13      | -3.42     |
| 12904.00 | 89.760      | 151.260 | 6432.74 | 6888.30    | -6179.73 | 3044.67 | 1764435.95 | 14574915.46 | 40°07'53.276"N | 80°33'22.692"W | 6889.06      | 153.771     | 1.21      | -0.14      | -1.20     |
| 12997.00 | 89.980      | 152.640 | 6432.95 | 6981.20    | -6261.81 | 3088.41 | 1764479.66 | 14574833.42 | 40°07'52.463"N | 80°33'22.134"W | 6982.01      | 153.747     | 1.50      | 0.24       | 1.48      |
| 13088.00 | 89.790      | 152.170 | 6433.13 | 7072.13    | -6342.45 | 3130.56 | 1764521.80 | 14574752.80 | 40°07'51.664"N | 80°33'21.597"W | 7072.98      | 153.730     | 0.56      | -0.21      | -0.52     |
| 13181.00 | 89.820      | 151.470 | 6433.45 | 7165.02    | -6424.43 | 3174.48 | 1764565.70 | 14574670.86 | 40°07'50.852"N | 80°33'21.036"W | 7165.93      | 153.705     | 0.75      | 0.03       | -0.75     |
| 13274.00 | 89.760      | 151.400 | 6433.79 | 7257.87    | -6506.11 | 3218.95 | 1764610.15 | 14574589.21 | 40°07'50.042"N | 80°33'20.469"W | 7258.86      | 153.676     | 0.10      | -0.06      | -0.08     |
| 13365.00 | 89.820      | 150.900 | 6434.12 | 7348.71    | -6585.81 | 3262.85 | 1764654.04 | 14574509.54 | 40°07'49.252"N | 80°33'19.909"W | 7349.77      | 153.644     | 0.55      | 0.07       | -0.55     |
| 13458.00 | 89.520      | 149.460 | 6434.66 | 7441.42    | -6666.50 | 3309.10 | 1764700.27 | 14574428.89 | 40°07'48.453"N | 80°33'19.319"W | 7442.60      | 153.601     | 1.58      | -0.32      | -1.55     |
| 13551.00 | 89.240      | 148.840 | 6435.66 | 7533.99    | -6746.33 | 3356.79 | 1764747.94 | 14574349.08 | 40°07'47.662"N | 80°33'18.710"W | 7535.32      | 153.546     | 0.73      | -0.30      | -0.67     |
| 13644.00 | 89.150      | 150.940 | 6436.97 | 7626.66    | -6826.77 | 3403.43 | 1764794.57 | 14574268.67 | 40°07'46.864"N | 80°33'18.115"W | 7628.12      | 153.502     | 2.26      | -0.10      | 2.26      |
| 13737.00 | 89.240      | 152.230 | 6438.28 | 7719.52    | -6908.56 | 3447.68 | 1764838.80 | 14574186.92 | 40°07'46.054"N | 80°33'17.550"W | 7721.05      | 153.479     | 1.39      | 0.10       | 1.39      |
| 13829.00 | 89.180      | 151.880 | 6439.54 | 7811.42    | -6989.82 | 3490.79 | 1764881.89 | 14574105.68 | 40°07'45.249"N | 80°33'17.001"W | 7813.02      | 153.462     | 0.39      | -0.07      | -0.38     |
| 13922.00 | 89.120      | 152.220 | 6440.92 | 7904.32    | -7071.96 | 3534.38 | 1764925.46 | 14574023.57 | 40°07'44.435"N | 80°33'16.445"W | 7905.98      | 153.445     | 0.37      | -0.06      | 0.37      |
| 14015.00 | 89.180      | 153.570 | 6442.30 | 7997.26    | -7154.74 | 3576.74 | 1764967.81 | 14573940.83 | 40°07'43.615"N | 80°33'15.905"W | 7998.96      | 153.439     | 1.45      | 0.06       | 1.45      |
| 14107.00 | 89.240      | 154.970 | 6443.57 | 8089.25    | -7237.61 | 3616.68 | 1765007.73 | 14573857.99 | 40°07'42.794"N | 80°33'15.396"W | 8090.94      | 153.448     | 1.52      | 0.07       | 1.52      |
| 14200.00 | 89.120      | 154.860 | 6444.90 | 8182.24    | -7321.83 | 3656.10 | 1765047.14 | 14573773.81 | 40°07'41.960"N | 80°33'14.894"W | 8183.90      | 153.465     | 0.18      | -0.13      | -0.12     |
| 14293.00 | 88.990      | 155.020 | 6446.44 | 8275.22    | -7406.06 | 3695.49 | 1765086.51 | 14573689.60 | 40°07'41.125"N | 80°33'14.392"W | 8276.86      | 153.482     | 0.22      | -0.14      | 0.17      |
| 14386.00 | 89.060      | 155.480 | 6448.02 | 8368.20    | -7490.51 | 3734.42 | 1765125.42 | 14573605.19 | 40°07'40.289"N | 80°33'13.897"W | 8369.80      | 153.501     | 0.50      | 0.08       | 0.49      |
| 14479.00 | 88.750      | 155.490 | 6449.80 | 8461.18    | -7575.11 | 3773.00 | 1765163.99 | 14573520.62 | 40°07'39.451"N | 80°33'13.405"W | 8462.73      | 153.523     | 0.33      | -0.33      | 0.01      |
| 14571.00 | 89.390      | 156.100 | 6451.29 | 8553.14    | -7659.01 | 3810.71 | 1765201.69 | 14573436.76 | 40°07'38.620"N | 80°33'12.925"W | 8554.64      | 153.548     | 0.96      | 0.70       | 0.66      |
| 14663.00 | 89.760      | 156.680 | 6451.97 | 8645.10    | -7743.30 | 3847.56 | 1765238.52 | 14573352.49 | 40°07'37.785"N | 80°33'12.456"W | 8646.53      | 153.578     | 0.75      | 0.40       | 0.63      |
| 14753.00 | 88.250      | 156.350 | 6453.53 | 8735.03    | -7825.83 | 3883.42 | 1765274.37 | 14573269.99 | 40°07'36.968"N | 80°33'12.000"W | 8736.40      | 153.608     | 1.72      | -1.68      | -0.37     |
| 14845.00 | 88.620      | 157.100 | 6456.05 | 8826.94    | -7910.31 | 3919.76 | 1765310.69 | 14573185.55 | 40°07'36.131"N | 80°33'11.538"W | 8828.23      | 153.640     | 0.91      | 0.40       | 0.82      |
| 14938.00 | 88.650      | 157.070 | 6458.23 | 8919.82    | -7995.95 | 3955.96 | 1765346.88 | 14573099.94 | 40°07'35.283"N | 80°33'11.077"W | 8921.03      | 153.676     | 0.08      | 0.08       | -0.03     |
| 15029.00 | 88.720      | 157.320 | 6460.29 | 9010.71    | -8079.82 | 3991.22 | 1765382.13 | 14573016.11 | 40°07'34.453"N | 80°33'10.629"W | 9011.84      | 153.712     | 0.28      | 0.03       | 0.27      |
| 15120.00 | 88.720      | 156.980 | 6462.36 | 9103.59    | -8165.50 | 4027.33 | 1765418.22 | 14572930.46 | 40°07'33.604"N | 80°33'10.170"W | 9104.65      | 153.747     | 0.37      | 0.00       | -0.37     |
| 15215.00 | 89.350      | 157.560 | 6463.90 | 9196.48    | -8251.26 | 4063.26 | 1765454.13 | 14572844.73 | 40°07'32.755"N | 80°33'09.713"W | 9197.46      | 153.782     | 0.95      | 0.72       | 0.62      |
| 15310.00 | 89.790      | 158.300 | 6464.56 | 9288.32    | -8336.52 | 4097.82 | 1765488.69 | 14572759.51 | 40°07'31.911"N | 80°33'09.273"W | 9289.22      | 153.824     | 0.91      | 0.43       | 0.80      |



## REFERENCE WELLPATH IDENTIFICATION

| Operator | SOUTHWESTERN ENERGY       | Slot     | Slot 6H                      |
|----------|---------------------------|----------|------------------------------|
| Area     | Ohio County, WV           | Well     | Michael Ratcliffe OHI 6H     |
| Field    | Ohio                      | Wellbore | Michael Ratcliffe OHI 6H AWB |
| Facility | Michael Ratcliffe OHI Pad |          |                              |

## WELLPATH DATA (276 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] |
|----------|-----------------|-------------|----------|----------------|------------|-----------|-------------------|--------------------|----------------|----------------|-------------------|-----------------|---------------|----------------------|---------------------|
| 15398.00 | 89.580          | 159.390     | 6465.06  | 9379.07        | -8421.38   | 4130.66   | 1765521.52        | 14572674.68        | 40°07'31.070"N | 80°33'08.856"W | 9379.87           | 153.872         | 1.22          | -0.23                | 1.20                |
| 15489.00 | 89.490          | 158.630     | 6465.80  | 9469.80        | -8506.34   | 4163.26   | 1765554.10        | 14572589.75        | 40°07'30.229"N | 80°33'08.442"W | 9470.51           | 153.921         | 0.84          | -0.10                | -0.84               |
| 15582.00 | 89.460          | 158.060     | 6466.65  | 9562.60        | -8592.77   | 4197.57   | 1765588.40        | 14572503.35        | 40°07'29.373"N | 80°33'08.006"W | 9563.23           | 153.984         | 0.61          | -0.03                | -0.61               |
| 15675.00 | 89.490          | 156.370     | 6467.50  | 9655.50        | -8678.51   | 4233.59   | 1765624.40        | 14572417.65        | 40°07'28.524"N | 80°33'07.548"W | 9656.07           | 153.996         | 1.82          | 0.03                 | -1.82               |
| 15766.00 | 89.490          | 154.870     | 6468.31  | 9746.48        | -8761.39   | 4271.15   | 1765661.95        | 14572334.80        | 40°07'27.703"N | 80°33'07.069"W | 9747.03           | 154.011         | 1.65          | 0.00                 | -1.65               |
| 15858.00 | 89.390          | 154.830     | 6469.21  | 9838.48        | -8844.66   | 4310.25   | 1765701.03        | 14572251.56        | 40°07'26.879"N | 80°33'06.572"W | 9839.02           | 154.019         | 0.12          | -0.11                | -0.04               |
| 15950.00 | 89.550          | 153.250     | 6470.06  | 9930.46        | -8927.37   | 4350.52   | 1765741.28        | 14572168.88        | 40°07'26.059"N | 80°33'06.059"W | 9931.01           | 154.019         | 1.73          | 0.17                 | -1.72               |
| 16043.00 | 89.490          | 150.970     | 6470.84  | 10023.37       | -9009.56   | 4394.01   | 1765784.77        | 14572086.72        | 40°07'25.245"N | 80°33'05.504"W | 10023.95          | 154.001         | 2.45          | -0.06                | -2.45               |
| 16136.00 | 89.330          | 150.670     | 6471.80  | 10116.16       | -9090.75   | 4439.35   | 1765830.09        | 14572005.56        | 40°07'24.440"N | 80°33'04.926"W | 10116.80          | 153.972         | 0.37          | -0.17                | -0.32               |
| 16229.00 | 89.460          | 150.510     | 6472.78  | 10208.92       | -9171.77   | 4485.02   | 1765875.74        | 14571924.58        | 40°07'23.637"N | 80°33'04.343"W | 10209.64          | 153.941         | 0.22          | 0.14                 | -0.17               |
| 16322.00 | 89.330          | 150.480     | 6473.76  | 10301.67       | -9252.70   | 4530.82   | 1765921.52        | 14571843.68        | 40°07'22.835"N | 80°33'03.759"W | 10302.46          | 153.910         | 0.14          | -0.14                | -0.03               |
| 16414.00 | 89.360          | 151.590     | 6474.81  | 10393.49       | -9333.19   | 4575.37   | 1765966.05        | 14571763.22        | 40°07'22.038"N | 80°33'03.190"W | 10394.34          | 153.885         | 1.21          | 0.03                 | 1.21                |
| 16507.00 | 88.990          | 151.780     | 6476.15  | 10486.35       | -9415.05   | 4619.48   | 1766010.14        | 14571681.39        | 40°07'21.227"N | 80°33'02.628"W | 10487.26          | 153.865         | 0.45          | -0.40                | 0.20                |
| 16600.00 | 89.420          | 153.110     | 6477.44  | 10579.28       | -9497.49   | 4662.49   | 1766053.14        | 14571598.98        | 40°07'20.410"N | 80°33'02.080"W | 10580.23          | 153.853         | 1.50          | 0.46                 | 1.43                |
| 16693.00 | 89.490          | 155.180     | 6478.33  | 10672.26       | -9581.17   | 4703.05   | 1766093.68        | 14571515.33        | 40°07'19.581"N | 80°33'01.563"W | 10673.21          | 153.855         | 2.23          | 0.08                 | 2.23                |
| 16785.00 | 89.420          | 156.580     | 6479.20  | 10764.24       | -9665.13   | 4740.64   | 1766131.26        | 14571431.40        | 40°07'18.749"N | 80°33'01.085"W | 10765.15          | 153.873         | 1.52          | -0.08                | 1.52                |
| 16878.00 | 89.860          | 158.050     | 6479.79  | 10857.13       | -9750.94   | 4776.50   | 1766167.11        | 14571345.63        | 40°07'17.900"N | 80°33'00.629"W | 10857.98          | 153.902         | 1.65          | 0.47                 | 1.58                |
| 16970.00 | 89.730          | 158.300     | 6480.12  | 10948.95       | -9836.34   | 4810.71   | 1766201.30        | 14571260.26        | 40°07'17.054"N | 80°33'00.194"W | 10949.73          | 153.938         | 0.31          | -0.14                | 0.27                |
| 17061.00 | 89.420          | 160.160     | 6480.79  | 11039.65       | -9921.42   | 4842.98   | 1766233.55        | 14571175.21        | 40°07'16.211"N | 80°32'59.784"W | 11040.34          | 153.981         | 2.07          | -0.34                | 2.04                |
| 17153.00 | 89.390          | 158.390     | 6481.75  | 11131.34       | -10007.46  | 4875.53   | 1766266.10        | 14571089.21        | 40°07'15.360"N | 80°32'59.371"W | 11131.94          | 154.025         | 1.92          | -0.03                | -1.92               |
| 17245.00 | 89.520          | 155.510     | 6482.62  | 11223.25       | -10092.10  | 4911.55   | 1766302.10        | 14571004.60        | 40°07'14.521"N | 80°32'58.912"W | 11223.80          | 154.049         | 3.13          | 0.14                 | -3.13               |
| 17338.00 | 89.790          | 155.570     | 6483.18  | 11316.23       | -10176.75  | 4950.05   | 1766340.59        | 14570919.98        | 40°07'13.683"N | 80°32'58.422"W | 11316.77          | 154.061         | 0.30          | 0.29                 | 0.06                |
| 17430.00 | 89.760          | 155.540     | 6483.54  | 11408.22       | -10260.51  | 4988.12   | 1766378.65        | 14570836.26        | 40°07'12.853"N | 80°32'57.938"W | 11408.74          | 154.073         | 0.05          | -0.03                | -0.03               |
| 17523.00 | 89.730          | 155.560     | 6483.96  | 11501.21       | -10345.16  | 5026.62   | 1766417.12        | 14570751.63        | 40°07'12.015"N | 80°32'57.448"W | 11501.71          | 154.085         | 0.04          | -0.03                | 0.02                |
| 17616.00 | 90.010          | 155.930     | 6484.17  | 11594.19       | -10429.95  | 5064.82   | 1766455.31        | 14570666.88        | 40°07'11.175"N | 80°32'56.962"W | 11594.67          | 154.099         | 0.50          | 0.30                 | 0.40                |
| 17708.00 | 90.010          | 156.220     | 6484.15  | 11686.16       | -10514.05  | 5102.13   | 1766492.61        | 14570582.81        | 40°07'10.342"N | 80°32'56.487"W | 11686.61          | 154.114         | 0.32          | 0.00                 | 0.32                |
| 17799.00 | 90.040          | 156.190     | 6484.11  | 11777.12       | -10597.31  | 5138.84   | 1766529.31        | 14570499.58        | 40°07'09.518"N | 80°32'56.020"W | 11777.55          | 154.130         | 0.05          | 0.03                 | -0.03               |
| 17892.00 | 89.790          | 156.500     | 6484.25  | 11870.08       | -10682.50  | 5176.16   | 1766566.61        | 14570414.43        | 40°07'08.674"N | 80°32'55.545"W | 11870.49          | 154.148         | 0.43          | -0.27                | 0.33                |
| 17984.00 | 89.980          | 156.940     | 6484.43  | 11962.02       | -10767.01  | 5212.52   | 1766602.96        | 14570329.95        | 40°07'07.837"N | 80°32'55.082"W | 11962.39          | 154.167         | 0.52          | 0.21                 | 0.48                |
| 18077.00 | 89.850          | 156.850     | 6484.56  | 12054.97       | -10852.29  | 5249.61   | 1766640.03        | 14570244.70        | 40°07'06.992"N | 80°32'54.611"W | 12055.32          | 154.185         | 0.97          | -0.13                | -0.96               |



## REFERENCE WELLPATH IDENTIFICATION

| Operator            | Slot     | Slot 6H                      |
|---------------------|----------|------------------------------|
| SOUTHWESTERN ENERGY | Well     | Michael Ratcliffe OHI 6H     |
| Area                | Wellbore | Michael Ratcliffe OHI 6H AWB |
| Field               |          |                              |
| Facility            |          |                              |

## WELLPATH DATA (276 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] |
|----------|-----------------|-------------|----------|----------------|------------|-----------|-------------------|--------------------|----------------|----------------|-------------------|-----------------|---------------|----------------------|---------------------|
| 18170.00 | 89.460          | 154.250     | 6485.12  | 12147.96       | -10936.68  | 5288.69   | 1766679.10        | 14570160.35        | 40°07'06.156"N | 80°32'54.113"W | 12148.30          | 154.193         | 1.98          | -0.43                | -1.94               |
| 18269.00 | 90.290          | 153.870     | 6485.33  | 12246.95       | -11025.70  | 5331.99   | 17666722.39       | 14570071.36        | 40°07'05.275"N | 80°32'53.561"W | 12247.30          | 154.192         | 0.92          | 0.84                 | -0.38               |
| 18363.00 | 90.100          | 156.500     | 6485.01  | 12340.94       | -11111.01  | 5371.44   | 1766761.82        | 14569986.08        | 40°07'04.429"N | 80°32'53.059"W | 12341.27          | 154.199         | 2.81          | -0.20                | 2.80                |
| 18456.00 | 90.130          | 158.070     | 6484.83  | 12433.84       | -11196.80  | 5407.35   | 1766797.71        | 14569900.33        | 40°07'03.580"N | 80°32'52.603"W | 12434.14          | 154.222         | 1.69          | 0.03                 | 1.69                |
| 18549.00 | 89.920          | 157.840     | 6484.78  | 12526.68       | -11283.00  | 5442.26   | 1766832.61        | 14569814.16        | 40°07'02.726"N | 80°32'52.159"W | 12526.94          | 154.250         | 0.33          | -0.23                | -0.25               |
| 18645.00 | 89.730          | 158.300     | 6485.08  | 12622.50       | -11372.05  | 5478.11   | 1766868.45        | 14569725.14        | 40°07'01.845"N | 80°32'51.703"W | 12622.73          | 154.279         | 0.52          | -0.20                | 0.48                |
| 18739.00 | 89.730          | 158.900     | 6485.52  | 12716.28       | -11459.57  | 5512.41   | 1766902.73        | 14569637.66        | 40°07'00.978"N | 80°32'51.268"W | 12716.46          | 154.311         | 0.64          | 0.00                 | 0.64                |
| 18833.00 | 89.640          | 158.400     | 6486.04  | 12810.04       | -11547.12  | 5546.63   | 1766936.94        | 14569550.14        | 40°07'00.111"N | 80°32'50.833"W | 12810.19          | 154.343         | 0.54          | -0.10                | -0.53               |
| 18928.00 | 89.700          | 157.890     | 6486.58  | 12904.86       | -11635.29  | 5581.99   | 1766972.29        | 14569462.01        | 40°06'59.238"N | 80°32'50.383"W | 12904.98          | 154.371         | 0.54          | 0.06                 | -0.54               |
| 19023.00 | 89.640          | 155.950     | 6487.13  | 12999.78       | -11722.68  | 5619.23   | 1767009.51        | 14569374.65        | 40°06'58.373"N | 80°32'49.910"W | 12999.88          | 154.389         | 2.04          | -0.06                | -2.04               |
| 19117.00 | 89.670          | 155.040     | 6487.70  | 13093.76       | -11808.21  | 5658.22   | 1767048.49        | 14569289.15        | 40°06'57.525"N | 80°32'49.414"W | 13093.86          | 154.397         | 0.97          | 0.03                 | -0.97               |
| 19211.00 | 89.580          | 154.420     | 6488.31  | 13187.76       | -11893.21  | 5698.35   | 1767088.60        | 14569204.18        | 40°06'56.683"N | 80°32'48.903"W | 13187.86          | 154.400         | 0.67          | -0.10                | -0.66               |
| 19306.00 | 89.450          | 153.850     | 6489.12  | 13282.75       | -11978.69  | 5739.79   | 1767130.02        | 14569118.74        | 40°06'55.837"N | 80°32'48.375"W | 13282.85          | 154.398         | 0.62          | -0.14                | -0.60               |
| 19401.00 | 89.420          | 153.470     | 6490.05  | 13377.74       | -12063.82  | 5781.94   | 1767172.16        | 14569033.64        | 40°06'54.993"N | 80°32'47.838"W | 13377.84          | 154.393         | 0.40          | -0.03                | -0.40               |
| 19495.00 | 89.420          | 154.230     | 6491.01  | 13471.72       | -12148.20  | 5823.36   | 1767213.57        | 14568949.30        | 40°06'54.157"N | 80°32'47.310"W | 13471.83          | 154.389         | 0.81          | 0.00                 | 0.81                |
| 19589.00 | 89.460          | 154.620     | 6491.92  | 13565.72       | -12232.98  | 5863.94   | 1767254.13        | 14568864.54        | 40°06'53.317"N | 80°32'46.794"W | 13565.83          | 154.389         | 0.42          | 0.04                 | 0.41                |
| 19684.00 | 89.520          | 154.510     | 6492.77  | 13660.71       | -12318.77  | 5904.74   | 1767294.91        | 14568778.79        | 40°06'52.468"N | 80°32'46.274"W | 13660.82          | 154.390         | 0.13          | 0.06                 | -0.12               |
| 19778.00 | 89.460          | 155.490     | 6493.61  | 13754.71       | -12403.96  | 5944.47   | 1767334.62        | 14568693.63        | 40°06'51.624"N | 80°32'45.769"W | 13754.81          | 154.394         | 1.04          | -0.06                | 1.04                |
| 19872.00 | 89.550          | 157.210     | 6494.42  | 13848.66       | -12490.06  | 5982.17   | 1767372.31        | 14568607.57        | 40°06'50.771"N | 80°32'45.289"W | 13848.75          | 154.408         | 1.83          | 0.10                 | 1.83                |
| 19967.00 | 89.760          | 158.300     | 6494.99  | 13943.51       | -12577.98  | 6018.13   | 1767408.26        | 14568519.67        | 40°06'49.900"N | 80°32'44.832"W | 13943.59          | 154.430         | 1.17          | 0.22                 | 1.15                |
| 20062.00 | 89.860          | 159.080     | 6495.31  | 14038.27       | -12666.49  | 6052.66   | 1767442.77        | 14568434.20        | 40°06'49.024"N | 80°32'44.393"W | 14038.32          | 154.459         | 0.83          | 0.11                 | 0.82                |
| 20156.00 | 89.950          | 158.230     | 6495.46  | 14132.04       | -12754.04  | 6086.87   | 1767476.97        | 14568343.69        | 40°06'48.157"N | 80°32'43.959"W | 14132.07          | 154.487         | 0.91          | 0.10                 | -0.90               |
| 20250.00 | 89.760          | 157.690     | 6495.70  | 14225.88       | -12841.17  | 6122.14   | 1767512.23        | 14568256.59        | 40°06'47.294"N | 80°32'43.510"W | 14225.90          | 154.510         | 0.61          | -0.20                | -0.57               |
| 20345.00 | 89.790          | 157.320     | 6496.07  | 14320.75       | -12928.94  | 6158.49   | 1767548.56        | 14568168.85        | 40°06'46.425"N | 80°32'43.048"W | 14320.77          | 154.530         | 0.39          | 0.03                 | -0.39               |
| 20438.00 | 89.700          | 155.790     | 6496.49  | 14413.70       | -13014.26  | 6195.49   | 1767585.55        | 14568083.57        | 40°06'45.580"N | 80°32'42.578"W | 14413.71          | 154.543         | 1.65          | -0.10                | -1.65               |
| 20532.00 | 89.760          | 155.380     | 6496.93  | 14507.68       | -13099.85  | 6234.35   | 1767624.39        | 14567998.01        | 40°06'44.732"N | 80°32'42.083"W | 14507.69          | 154.550         | 0.44          | 0.06                 | -0.44               |
| 20627.00 | 89.820          | 154.390     | 6497.28  | 14602.68       | -13185.87  | 6274.67   | 1767664.69        | 14567912.02        | 40°06'43.880"N | 80°32'41.570"W | 14602.69          | 154.552         | 1.04          | 0.06                 | -1.04               |
| 20722.00 | 89.790          | 153.020     | 6497.60  | 14697.66       | -13271.04  | 6316.75   | 1767706.76        | 14567826.89        | 40°06'43.037"N | 80°32'41.034"W | 14697.68          | 154.546         | 1.44          | -0.03                | -1.44               |
| 20815.00 | 89.520          | 152.490     | 6498.16  | 14790.61       | -13353.72  | 6359.32   | 1767749.32        | 14567744.24        | 40°06'42.217"N | 80°32'40.491"W | 14790.63          | 154.535         | 0.64          | -0.29                | -0.57               |
| 20909.00 | 89.180          | 152.450     | 6499.23  | 14884.54       | -13437.07  | 6402.77   | 1767792.75        | 14567660.92        | 40°06'41.391"N | 80°32'39.938"W | 14884.56          | 154.522         | 0.36          | -0.36                | -0.04               |



# Actual Wellpath Report

Michael Ratcliffe OHI 6H AWP Proj: 24236'

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| REFERENCE WELLPATH IDENTIFICATION |                              |
|-----------------------------------|------------------------------|
| Operator                          | SOUTHWESTERN ENERGY          |
| Area                              | Ohio County, WV              |
| Field                             | Ohio                         |
| Facility                          | Michael Ratcliffe OHI Pad    |
| Slot                              | Slot 6H                      |
| Well                              | Michael Ratcliffe OHI 6H     |
| Wellbore                          | Michael Ratcliffe OHI 6H AWB |

## WELLPATH DATA (276 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) |
|----------|-----------------|-------------|----------|----------------|------------|-----------|-------------------|--------------------|----------------|----------------|-------------------|-----------------|---------------|----------------------|---------------------|
| 21003.00 | 89.240          | 152.270     | 6500.52  | 14978.46       | -13520.33  | 6446.37   | 1767836.33        | 14567577.69        | 40°06'40.566"N | 80°32'39.382"W | 14978.49          | 154.509         | 0.20          | 0.06                 | -0.19               |
| 21098.00 | 89.150          | 153.200     | 6501.86  | 15073.40       | -13604.77  | 6489.89   | 1767879.83        | 14567493.29        | 40°06'39.730"N | 80°32'38.828"W | 15073.43          | 154.497         | 0.98          | -0.09                | 0.98                |
| 21192.00 | 89.270          | 154.440     | 6503.15  | 15167.38       | -13689.11  | 6531.36   | 1767921.28        | 14567408.97        | 40°06'38.894"N | 80°32'38.300"W | 15167.41          | 154.493         | 1.33          | 0.13                 | 1.32                |
| 21287.00 | 89.120          | 155.080     | 6504.49  | 15262.37       | -13775.04  | 6571.86   | 1767961.77        | 14567236.08        | 40°06'38.043"N | 80°32'37.784"W | 15262.40          | 154.495         | 0.69          | -0.16                | 0.67                |
| 21382.00 | 89.180          | 157.010     | 6505.90  | 15357.32       | -13861.84  | 6610.43   | 1768000.32        | 14567236.31        | 40°06'37.183"N | 80°32'37.293"W | 15357.35          | 154.504         | 2.03          | 0.06                 | 2.03                |
| 21476.00 | 89.150          | 154.860     | 6507.27  | 15451.28       | -13947.66  | 6648.75   | 1768038.63        | 14567150.53        | 40°06'36.333"N | 80°32'36.806"W | 15451.31          | 154.513         | 2.29          | -0.03                | -2.29               |
| 21571.00 | 89.150          | 153.010     | 6508.68  | 15546.26       | -14032.98  | 6690.49   | 1768080.35        | 14567065.24        | 40°06'35.488"N | 80°32'36.274"W | 15546.29          | 154.510         | 1.95          | 0.00                 | -1.95               |
| 21666.00 | 89.090          | 152.910     | 6510.14  | 15641.21       | -14117.59  | 6733.67   | 1768123.52        | 14566980.67        | 40°06'34.650"N | 80°32'35.724"W | 15641.24          | 154.500         | 0.12          | -0.06                | -0.11               |
| 21760.00 | 89.180          | 153.290     | 6511.56  | 15735.17       | -14201.40  | 6776.19   | 1768166.03        | 14566896.88        | 40°06'33.819"N | 80°32'35.182"W | 15735.21          | 154.492         | 0.42          | 0.10                 | 0.40                |
| 21854.00 | 89.150          | 154.410     | 6512.93  | 15829.15       | -14285.77  | 6817.62   | 1768207.43        | 14566812.54        | 40°06'32.984"N | 80°32'34.655"W | 15829.19          | 154.488         | 1.19          | -0.03                | 1.19                |
| 21948.00 | 89.150          | 155.010     | 6514.32  | 15923.14       | -14370.75  | 6857.77   | 1768247.57        | 14566727.59        | 40°06'32.142"N | 80°32'34.144"W | 15923.18          | 154.489         | 0.64          | 0.00                 | 0.64                |
| 22043.00 | 89.150          | 155.510     | 6515.73  | 16018.12       | -14457.02  | 6897.52   | 1768287.31        | 14566641.36        | 40°06'31.287"N | 80°32'33.638"W | 16018.16          | 154.494         | 0.53          | 0.00                 | 0.53                |
| 22138.00 | 89.180          | 156.660     | 6517.11  | 16113.08       | -14543.86  | 6936.03   | 1768325.80        | 14566554.56        | 40°06'30.427"N | 80°32'33.148"W | 16113.11          | 154.503         | 1.21          | 0.03                 | 1.21                |
| 22233.00 | 89.120          | 157.700     | 6518.52  | 16207.97       | -14631.41  | 6972.87   | 1768362.63        | 14566467.04        | 40°06'29.560"N | 80°32'32.680"W | 16207.99          | 154.519         | 1.10          | -0.06                | 1.09                |
| 22327.00 | 89.090          | 159.360     | 6519.99  | 16301.74       | -14718.88  | 7007.27   | 1768397.01        | 14566379.61        | 40°06'28.694"N | 80°32'32.243"W | 16301.75          | 154.542         | 1.77          | -0.03                | 1.77                |
| 22421.00 | 89.150          | 159.690     | 6521.44  | 16395.38       | -14806.93  | 7040.14   | 1768429.88        | 14566291.59        | 40°06'27.822"N | 80°32'31.825"W | 16395.39          | 154.571         | 0.36          | 0.06                 | 0.35                |
| 22516.00 | 89.180          | 159.220     | 6522.82  | 16490.03       | -14895.87  | 7073.48   | 1768463.20        | 14566202.68        | 40°06'26.941"N | 80°32'31.402"W | 16490.03          | 154.599         | 0.50          | 0.03                 | -0.49               |
| 22610.00 | 89.240          | 159.000     | 6524.12  | 16583.73       | -14983.69  | 7107.00   | 1768496.70        | 14566114.90        | 40°06'26.072"N | 80°32'30.977"W | 16583.73          | 154.624         | 0.24          | 0.06                 | -0.23               |
| 22705.00 | 89.610          | 159.010     | 6525.07  | 16678.45       | -15072.38  | 7141.03   | 1768530.72        | 14566026.24        | 40°06'25.194"N | 80°32'30.545"W | 16678.45          | 154.649         | 0.39          | 0.39                 | 0.01                |
| 22799.00 | 89.460          | 160.300     | 6525.83  | 16772.08       | -15160.51  | 7173.71   | 1768563.39        | 14565938.15        | 40°06'24.321"N | 80°32'30.130"W | 16772.09          | 154.677         | 1.38          | -0.16                | 1.37                |
| 22894.00 | 89.300          | 159.820     | 6526.86  | 16866.65       | -15249.81  | 7206.11   | 1768595.78        | 14565848.88        | 40°06'23.437"N | 80°32'29.719"W | 16866.67          | 154.708         | 0.53          | -0.17                | -0.51               |
| 22989.00 | 89.330          | 158.470     | 6528.00  | 16961.34       | -15338.57  | 7239.92   | 1768629.58        | 14565760.15        | 40°06'22.558"N | 80°32'29.289"W | 16961.38          | 154.732         | 1.42          | 0.03                 | -1.42               |
| 23084.00 | 89.460          | 156.720     | 6529.00  | 17056.21       | -15426.39  | 7276.13   | 1768665.77        | 14565672.36        | 40°06'21.689"N | 80°32'28.829"W | 17056.25          | 154.748         | 1.85          | 0.14                 | -1.84               |
| 23178.00 | 89.460          | 154.910     | 6529.89  | 17150.18       | -15512.14  | 7314.64   | 1768704.26        | 14565586.65        | 40°06'20.839"N | 80°32'28.340"W | 17150.23          | 154.754         | 1.93          | 0.00                 | -1.93               |
| 23272.00 | 89.490          | 152.590     | 6530.75  | 17244.16       | -15596.43  | 7356.21   | 1768745.82        | 14565502.39        | 40°06'20.004"N | 80°32'27.810"W | 17244.20          | 154.749         | 2.47          | 0.03                 | -2.47               |
| 23367.00 | 89.460          | 157.100     | 6531.62  | 17339.06       | -15680.42  | 7400.58   | 1768790.18        | 14565418.43        | 40°06'19.172"N | 80°32'27.245"W | 17339.10          | 154.734         | 0.93          | -0.03                | -0.93               |
| 23462.00 | 89.390          | 156.310     | 6532.57  | 17433.92       | -15763.92  | 7445.90   | 1768835.47        | 14565334.97        | 40°06'18.345"N | 80°32'26.667"W | 17433.94          | 154.717         | 0.43          | -0.07                | -0.42               |
| 23556.00 | 89.390          | 156.150     | 6533.57  | 17527.75       | -15846.61  | 7491.14   | 1768880.70        | 14565252.61        | 40°06'17.528"N | 80°32'26.090"W | 17527.77          | 154.698         | 0.17          | 0.00                 | -0.17               |
| 23651.00 | 89.360          | 152.230     | 6534.61  | 17622.62       | -15929.94  | 7536.19   | 1768925.73        | 14565169.01        | 40°06'16.699"N | 80°32'25.516"W | 17622.63          | 154.682         | 1.14          | -0.03                | 1.14                |
| 23745.00 | 89.460          | 153.700     | 6535.58  | 17716.57       | -16013.66  | 7578.91   | 1768968.43        | 14565085.32        | 40°06'15.870"N | 80°32'24.972"W | 17716.58          | 154.673         | 1.57          | 0.11                 | 1.56                |

Department of  
Gas  
Protection



### REFERENCE WELLPATH IDENTIFICATION

|          |                           |  |          |                              |
|----------|---------------------------|--|----------|------------------------------|
| Operator | SOUTHWESTERN ENERGY       |  | Slot     | Slot 6H                      |
| Area     | Ohio County, WV           |  | Well     | Michael Ratcliffe OHI 6H     |
| Field    | Ohio                      |  | Wellbore | Michael Ratcliffe OHI 6H AWB |
| Facility | Michael Ratcliffe OHI Pad |  |          |                              |

### WELLPATH DATA (276 stations)

| MD       | Inclination | Azimuth | TVD     | Vert.Sect | North     | East    | Grid East  | Grid North  | Latitude       | Longitude      | Closure Dist | Closure Dir | DLS       | Build Rate | Turn Rate |
|----------|-------------|---------|---------|-----------|-----------|---------|------------|-------------|----------------|----------------|--------------|-------------|-----------|------------|-----------|
| [ft]     | [°]         | [°]     | [ft]    | [ft]      | [ft]      | [ft]    | [US ft]    | [US ft]     | [ft]           | [ft]           | [ft]         | [°]         | [°/100ft] | [°/100ft]  | [°/100ft] |
| 23840.00 | 89.390      | 155.150 | 6536.53 | 17811.56  | -16099.35 | 7619.92 | 1769009.43 | 14564999.67 | 40°06'15.021"N | 80°32'24.450"W | 17811.57     | 154.672     | 1.53      | -0.07      | 1.53      |
| 23935.00 | 89.360      | 155.150 | 6537.57 | 17906.55  | -16185.54 | 7659.84 | 1769049.33 | 14564913.50 | 40°06'14.167"N | 80°32'23.942"W | 17906.56     | 154.674     | 0.03      | -0.03      | 0.00      |
| 24029.00 | 89.420      | 155.260 | 6538.57 | 18000.54  | -16270.87 | 7699.26 | 1769088.74 | 14564828.21 | 40°06'13.322"N | 80°32'23.440"W | 18000.55     | 154.677     | 0.13      | 0.06       | 0.12      |
| 24124.00 | 89.390      | 154.370 | 6539.55 | 18095.54  | -16356.84 | 7739.68 | 1769129.14 | 14564742.28 | 40°06'12.470"N | 80°32'22.926"W | 18095.55     | 154.678     | 0.94      | -0.03      | -0.94     |
| 24212.00 | 89.390      | 153.500 | 6540.49 | 18183.53  | -16435.88 | 7778.34 | 1769167.79 | 14564663.26 | 40°06'11.687"N | 80°32'22.433"W | 18183.53     | 154.674     | 0.99      | 0.00       | -0.99     |
| 24236.00 | 89.390      | 153.500 | 6540.75 | 18207.52  | -16457.36 | 7789.05 | 1769178.50 | 14564641.79 | 40°06'11.474"N | 80°32'22.297"W | 18207.53     | 154.672     | 0.00      | 0.00       | 0.00      |

### HOLE & CASING SECTIONS - Ref Wellbore: Michael Ratcliffe OHI 6H AWB Ref Wellpath: Michael Ratcliffe OHI 6H AWP Proj: 24236'

| String/Diameter             | Start MD | End MD   | Interval | Start TVD | End TVD | Start N/S | Start E/W | End N/S | End E/W |
|-----------------------------|----------|----------|----------|-----------|---------|-----------|-----------|---------|---------|
|                             | [ft]     | [ft]     | [ft]     | [ft]      | [ft]    | [ft]      | [ft]      | [ft]    | [ft]    |
| 17.5in Open Hole            | 26.00    | 678.00   | 652.00   | 26.00     | 677.97  | 0.00      | 0.00      | -4.82   | -3.19   |
| 13.375in Casing Surface     | 26.00    | 678.00   | 652.00   | 26.00     | 677.97  | 0.00      | 0.00      | -4.82   | -3.19   |
| 12.25in Open Hole           | 678.00   | 2067.00  | 1389.00  | 677.97    | 2066.87 | -4.82     | -3.19     | 3.03    | 1.83    |
| 9.625in Casing Intermediate | 26.00    | 2067.00  | 2041.00  | 26.00     | 2066.87 | 0.00      | 0.00      | 3.03    | 1.83    |
| 8.75in Open Hole            | 2067.00  | 5779.00  | 3712.00  | 2066.87   | 5765.84 | 3.03      | 1.83      | -2.53   | 202.85  |
| 8.5in Open Hole             | 5779.00  | 24237.00 | 18458.00 | 5765.84   | N/A     | -2.53     | 202.85    | N/A     | N/A     |
| 5.5in Casing Production     | 26.00    | 24237.00 | 24211.00 | 26.00     | N/A     | 0.00      | 0.00      | N/A     | N/A     |



### REFERENCE WELLPATH IDENTIFICATION

| Operator            | Slot     | Slot 6H                      |
|---------------------|----------|------------------------------|
| SOUTHWESTERN ENERGY | Well     | Michael Ratcliffe OHI 6H     |
| Area                | Wellbore | Michael Ratcliffe OHI 6H AWB |
| Field               |          |                              |
| Facility            |          |                              |

### TARGETS

| Name                               | TVD [ft] | North [ft] | East [ft] | Grid East [US ft] | Grid North [US ft] | Latitude       | Longitude      | Shape |
|------------------------------------|----------|------------|-----------|-------------------|--------------------|----------------|----------------|-------|
| Michael Ratcliffe OHI 6H LP Rev-6  | 6361.00  | -495.47    | 508.95    | 1761901.19        | 14580597.53        | 40°08'49.572"N | 80°33'54.979"W | point |
| Michael Ratcliffe OHI 6H BHL Rev-6 | 6555.00  | -16451.93  | 7805.41   | 1769194.85        | 14564647.22        | 40°06'11.527"N | 80°32'22.086"W | point |

### WELLPATH COMPOSITION - Ref Wellbore: Michael Ratcliffe OHI 6H AWB    Ref Wellpath: Michael Ratcliffe OHI 6H AWP Proj: 24236'

| Start MD [ft] | End MD [ft] | Positional Uncertainty Model                   | Log Name/Comment                             | Wellbore                     |
|---------------|-------------|--|--|------------------------------|
| 26.00         | 622.00      | OWSG MWD rev2 + HRGM                           | 01_Premier MWD <17 1/2"> (156'-622')         | Michael Ratcliffe OHI 6H AWB |
| 622.00        | 2014.00     | OWSG MWD rev2 + HRGM                           | 02_Premier MWD <12 1/4"> (698'-2014')        | Michael Ratcliffe OHI 6H AWB |
| 2014.00       | 5707.00     | OWSG MWD rev2 + HRGM                           | 03_Premier MWD <8 3/4"> (2093'-5707')        | Michael Ratcliffe OHI 6H AWB |
| 5707.00       | 24212.00    | OWSG MWD rev2 +HRGM + Multi-Station Correction | 04_BH AT Curve + MSA <8 1/2"> (5784'-24212') | Michael Ratcliffe OHI 6H AWB |
| 24212.00      | 24236.00    | Blind Drilling (std)                           | Projection to bit                            | Michael Ratcliffe OHI 6H AWB |

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**REFERENCE WELLPATH IDENTIFICATION**

| Operator                  | Slot     | Slot 6H                      |
|---------------------------|----------|------------------------------|
| SOUTHWESTERN ENERGY       | Well     | Michael Ratcliffe OHI 6H     |
| Ohio County, WV           | Wellbore | Michael Ratcliffe OHI 6H AWB |
| Ohio                      |          |                              |
| Michael Ratcliffe OHI Pad |          |                              |

**COMMENTS**

Wellpath general comments  
API: 47-069-00287-0000  
BH Job #: 109607119  
Rig: SDC 41  
Duration: 02/02/2019 - 02/09/2019

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Well Name: Michael Ratcliffe OHI 6H 47069002870000

| LITHOLOGY/FORMATION | TOP DEPTH, MD (FT) | TOP DEPTH, TVD (FT) | BOTTOM DEPTH, MD (FT) | BOTTOM DEPTH, TVD (FT) | QUANTITY AND TYPE OF FLUID |
|---------------------|--------------------|---------------------|-----------------------|------------------------|----------------------------|
| Base of Fresh Water | 0.00               | 0.00                | 402.00                | 402.00                 |                            |
| Top of Salt Water   | 755.00             | 755.00              | NA                    | NA                     |                            |
| Pittsburgh Coal     | 611.00             | 611.00              | 616.00                | 616.00                 |                            |
| Pottsville (ss)     | 749.00             | 749.00              | 831.00                | 831.00                 |                            |
| Raven Cliff (ss)    | 1360.00            | 1360.00             | 1792.00               | 1792.00                |                            |
| Big Injun (ss)      | 1792.00            | 1792.00             | 1935.00               | 1935.00                |                            |
| Rhinestreet (shale) | 5811.00            | 5797.00             | 6027.00               | 6002.00                |                            |
| Cashaqua (shale)    | 6027.00            | 6002.00             | 6104.00               | 6069.00                |                            |
| Middlesex (shale)   | 6104.00            | 6069.00             | 6200.00               | 6144.00                |                            |
| Burket (shale)      | 6200.00            | 6144.00             | 6226.00               | 6163.00                |                            |
| Tully (ls)          | 6226.00            | 6163.00             | 6288.00               | 6205.00                |                            |
| Mahantango (shale)  | 6288.00            | 6205.00             | 6595.00               | 6335.00                |                            |
| Marcellus (shale)   | 6595.00            | 6335.00             | NA                    | NA                     | GAS                        |

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