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## **EQT PRODUCTION**

**Marion County, WV**

**GLO76 Pad**

**Well #514745- Marcellus - Slot 514745**

**Main Wellbore**

**Design: 514745 As Drilled Surveys**

## **Standard Survey Report**

**24 November, 2015**

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**PRODIRECTIONAL**



# Professional Directional Survey Report



|                  |                           |                                     |  |
|------------------|---------------------------|-------------------------------------|--|
| <b>Company:</b>  | EQT PRODUCTION            | <b>Local Co-ordinate Reference:</b> | Well Well #514745- Marcellus - Slot 514745 |
| <b>Project:</b>  | Manon County, WV          | <b>TVD Reference:</b>               | GL 1424 + 23' KB @ 1447 00usft             |
| <b>Site:</b>     | GLO76 Pad                 | <b>MD Reference:</b>                | GL 1424 + 23' KB @ 1447 00usft             |
| <b>Well:</b>     | Well #514745- Marcellus   | <b>North Reference:</b>             | Gnd  |
| <b>Wellbore:</b> | Main Wellbore             | <b>Survey Calculation Method:</b>   | Minimum Curvature                          |
| <b>Design:</b>   | 514745 As Drilled Surveys | <b>Database:</b>                    | Well_Planner1                              |

|                    |                                      |                      |                |
|--------------------|--------------------------------------|----------------------|----------------|
| <b>Project</b>     | Marion County, WV                    |                      |                |
| <b>Map System:</b> | US State Plane 1927 (Exact solution) | <b>System Datum:</b> | Mean Sea Level |
| <b>Geo Datum:</b>  | NAD 1927 (NADCON CONUS)              |                      |                |
| <b>Map Zone:</b>   | West Virginia North 4701             |                      |                |

|                              |           |                          |                   |
|------------------------------|-----------|--------------------------|-------------------|
| <b>Site</b>                  | GLO76 Pad |                          |                   |
| <b>Site Position:</b>        |           | <b>Northing:</b>         | 389,060.60 usft   |
| <b>From:</b>                 | Map       | <b>Easting:</b>          | 1,721,015.30 usft |
| <b>Position Uncertainty:</b> | 0.00 usft | <b>Slot Radius:</b>      | 13-3/16 "         |
|                              |           | <b>Latitude:</b>         | 39° 33' 50.33 N   |
|                              |           | <b>Longitude:</b>        | 80° 29' 22.49 W   |
|                              |           | <b>Grid Convergence:</b> | -0.63 °           |

|                             |                                       |                            |                                   |
|-----------------------------|---------------------------------------|----------------------------|-----------------------------------|
| <b>Well</b>                 | Well #514745- Marcellus - Slot 514745 |                            |                                   |
| <b>Well Position</b>        | +N/-S                                 | 0.00 usft                  | <b>Northing:</b> 389,057.70 usft  |
|                             | +E/-W                                 | 0.00 usft                  | <b>Easting:</b> 1,721,030.00 usft |
| <b>Position Uncertainty</b> | 0.00 usft                             | <b>Wellhead Elevation:</b> | 1,447.00 usft                     |
|                             |                                       | <b>Latitude:</b>           | 39° 33' 50.30 N                   |
|                             |                                       | <b>Longitude:</b>          | 80° 29' 22.31 W                   |
|                             |                                       | <b>Ground Level:</b>       | 1,424.00 usft                     |

|                  |                   |                    |                                   |
|------------------|-------------------|--------------------|-----------------------------------|
| <b>Wellbore</b>  | Main Wellbore     |                    |                                   |
| <b>Magnetics</b> | <b>Model Name</b> | <b>Sample Date</b> | <b>Declination (°)</b>            |
|                  | HDGM              | 10/21/2015         | -8.65                             |
|                  |                   |                    | <b>Dip Angle (°)</b> 67.03        |
|                  |                   |                    | <b>Field Strength (nT)</b> 52,530 |

|                          |                                |                      |                             |
|--------------------------|--------------------------------|----------------------|-----------------------------|
| <b>Design</b>            | 514745 As Drilled Surveys      |                      |                             |
| <b>Audit Notes:</b>      |                                |                      |                             |
| <b>Version:</b>          | 1.0                            | <b>Phase:</b>        | ACTUAL                      |
|                          |                                | <b>Tie On Depth:</b> | 10.00                       |
| <b>Vertical Section:</b> | <b>Depth From (TVD) (usft)</b> | <b>+N/-S (usft)</b>  | <b>+E/-W (usft)</b>         |
|                          | 10.00                          | 0.00                 | 0.00                        |
|                          |                                |                      | <b>Direction (°)</b> 153.28 |

|                       |                  |                                      |                                   |
|-----------------------|------------------|--------------------------------------|-----------------------------------|
| <b>Survey Program</b> | Date 11/24/2015  |                                      |                                   |
| <b>From (usft)</b>    | <b>To (usft)</b> | <b>Survey (Wellbore)</b>             | <b>Tool Name</b>                  |
| 110.00                | 6,310.00         | 514745 Gyrodata Gyro (Main Wellbore) | GYD_DP_MS                         |
| 6,438.00              | 12,800.00        | ProDirectional (Main Wellbore)       | MWD+IGRF                          |
|                       |                  |                                      | <b>Description</b>                |
|                       |                  |                                      | Gyrodata gyro-compassing and drop |
|                       |                  |                                      | MWD+IGRF v3:standard declination  |

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 10.00                 | 0.00            | 0.00        | 10.00                 | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 110.00                | 0.08            | 321.83      | 110.00                | 0.05         | -0.04        | -0.07                   | 0.08                    | 0.08                   | 0.00                  |
| 210.00                | 0.06            | 311.79      | 210.00                | 0.14         | -0.13        | -0.19                   | 0.02                    | -0.02                  | -10.04                |
| 310.00                | 0.15            | 280.00      | 310.00                | 0.20         | -0.29        | -0.31                   | 0.10                    | 0.09                   | -9.70                 |
| 410.00                | 0.14            | 270.30      | 410.00                | 0.23         | -0.54        | -0.45                   | 0.03                    | -0.01                  | -9.70                 |
| 510.00                | 0.16            | 281.51      | 510.00                | 0.25         | -0.80        | -0.59                   | 0.04                    | 0.02                   | -11.21                |
| 610.00                | 0.18            | 297.27      | 610.00                | 0.35         | -1.08        | -0.80                   | 0.05                    | 0.02                   | -15.75                |
| 710.00                | 0.21            | 293.45      | 710.00                | 0.50         | -1.39        | -1.07                   | 0.03                    | 0.03                   | -3.82                 |
| 810.00                | 0.20            | 291.38      | 810.00                | 0.64         | -1.72        | -1.34                   | 0.01                    | -0.01                  | -2.07                 |
| 910.00                | 0.36            | 291.13      | 910.00                | 0.81         | -2.17        | -1.70                   | 0.16                    | 0.16                   | -0.25                 |

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Professional Directional  
Survey Report



**Company:** EQT PRODUCTION  
**Project:** Marion County, WV  
**Site:** GLO76 Pad  
**Well:** Well #514745- Marcellus  
**Wellbore:** Main Wellbore  
**Design:** 514745 As Drilled Surveys

**Local Co-ordinate Reference:** Well Well #514745- Marcellus - Slot 514745  
**TVD Reference:** GL 1424 + 23' KB @ 1447 00usft  
**MD Reference:** GL 1424 + 23' KB @ 1447 00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Well\_Planner1

Survey

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N-S (usft) | +E-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|-----------------------|-----------------|-------------|-----------------------|-------------|-------------|-------------------------|-------------------------|------------------------|-----------------------|
| 1,010.00              | 0.46            | 298.96      | 1,009.99              | 1.12        | -2.82       | -2.27                   | 0.11                    | 0.10                   | 7.83                  |
| 1,110.00              | 0.59            | 312.88      | 1,109.99              | 1.66        | -3.55       | -3.08                   | 0.18                    | 0.13                   | 13.92                 |
| 1,210.00              | 0.72            | 317.99      | 1,209.98              | 2.48        | -4.34       | -4.17                   | 0.14                    | 0.13                   | 5.11                  |
| 1,310.00              | 0.85            | 317.65      | 1,309.97              | 3.50        | -5.26       | -5.49                   | 0.13                    | 0.13                   | -0.34                 |
| 1,410.00              | 0.91            | 317.59      | 1,409.96              | 4.83        | -6.30       | -6.97                   | 0.06                    | 0.06                   | -0.06                 |
| 1,510.00              | 1.07            | 327.94      | 1,509.95              | 6.01        | -7.33       | -8.66                   | 0.24                    | 0.16                   | 10.35                 |
| 1,610.00              | 1.13            | 334.15      | 1,609.93              | 7.69        | -8.26       | -10.58                  | 0.13                    | 0.06                   | 6.21                  |
| 1,710.00              | 1.13            | 333.75      | 1,709.91              | 9.46        | -9.12       | -12.55                  | 0.01                    | 0.00                   | -0.40                 |
| 1,810.00              | 1.10            | 336.06      | 1,809.89              | 11.22       | -9.95       | -14.50                  | 0.05                    | -0.03                  | 2.31                  |
| 1,910.00              | 1.01            | 338.50      | 1,909.87              | 12.92       | -10.66      | -16.33                  | 0.10                    | -0.09                  | 2.44                  |
| 2,010.00              | 0.90            | 329.76      | 2,009.86              | 14.42       | -11.38      | -17.99                  | 0.18                    | -0.11                  | -8.74                 |
| 2,110.00              | 1.00            | 314.80      | 2,109.85              | 15.71       | -12.39      | -19.61                  | 0.27                    | 0.10                   | -14.96                |
| 2,210.00              | 0.97            | 315.36      | 2,209.83              | 16.93       | -13.61      | -21.24                  | 0.03                    | -0.03                  | 0.56                  |
| 2,310.00              | 0.98            | 315.13      | 2,309.82              | 18.14       | -14.81      | -22.86                  | 0.01                    | 0.01                   | -0.23                 |
| 2,410.00              | 0.95            | 316.29      | 2,409.80              | 19.34       | -15.98      | -24.46                  | 0.04                    | -0.03                  | 1.16                  |
| 2,510.00              | 0.98            | 317.49      | 2,509.79              | 20.57       | -17.13      | -26.08                  | 0.04                    | 0.03                   | 1.20                  |
| 2,610.00              | 1.01            | 318.96      | 2,609.77              | 21.87       | -18.29      | -27.75                  | 0.04                    | 0.03                   | 1.47                  |
| 2,710.00              | 0.99            | 316.25      | 2,709.76              | 23.15       | -19.47      | -29.43                  | 0.05                    | -0.02                  | -2.71                 |
| 2,810.00              | 0.88            | 316.58      | 2,809.74              | 24.34       | -20.59      | -31.00                  | 0.11                    | -0.11                  | 0.33                  |
| 2,910.00              | 0.65            | 320.45      | 2,909.74              | 25.33       | -21.48      | -32.28                  | 0.24                    | -0.23                  | 3.87                  |
| 3,010.00              | 0.56            | 319.50      | 3,009.73              | 26.14       | -22.16      | -33.31                  | 0.09                    | -0.09                  | -0.95                 |
| 3,110.00              | 0.50            | 324.93      | 3,109.73              | 26.87       | -22.73      | -34.22                  | 0.08                    | -0.06                  | 5.43                  |
| 3,210.00              | 0.54            | 320.63      | 3,209.72              | 27.59       | -23.28      | -35.11                  | 0.06                    | 0.04                   | -4.30                 |
| 3,310.00              | 0.49            | 317.93      | 3,309.72              | 28.27       | -23.86      | -35.98                  | 0.06                    | -0.05                  | -2.70                 |
| 3,410.00              | 0.74            | 309.10      | 3,409.71              | 29.00       | -24.65      | -36.98                  | 0.27                    | 0.25                   | -8.83                 |
| 3,510.00              | 1.03            | 298.00      | 3,509.70              | 29.83       | -25.94      | -38.31                  | 0.34                    | 0.29                   | -11.10                |
| 3,610.00              | 1.06            | 300.54      | 3,609.68              | 30.72       | -27.53      | -39.82                  | 0.06                    | 0.03                   | 2.54                  |
| 3,710.00              | 1.03            | 299.55      | 3,709.67              | 31.63       | -29.11      | -41.34                  | 0.04                    | -0.03                  | -0.99                 |
| 3,810.00              | 1.09            | 293.63      | 3,809.65              | 32.46       | -30.77      | -42.82                  | 0.12                    | 0.06                   | -5.92                 |
| 3,910.00              | 1.15            | 292.31      | 3,909.63              | 33.22       | -32.57      | -44.31                  | 0.07                    | 0.06                   | -1.32                 |
| 4,010.00              | 1.17            | 289.78      | 4,009.61              | 33.94       | -34.45      | -45.81                  | 0.05                    | 0.02                   | -2.53                 |
| 4,110.00              | 1.17            | 290.50      | 4,109.59              | 34.65       | -36.37      | -47.30                  | 0.01                    | 0.00                   | 0.72                  |
| 4,210.00              | 1.17            | 291.56      | 4,209.57              | 35.38       | -38.28      | -48.81                  | 0.02                    | 0.00                   | 1.06                  |
| 4,310.00              | 1.05            | 297.47      | 4,309.55              | 36.18       | -40.04      | -50.32                  | 0.17                    | -0.12                  | 5.91                  |
| 4,410.00              | 1.07            | 300.62      | 4,409.53              | 37.08       | -41.66      | -51.85                  | 0.06                    | 0.02                   | 3.15                  |
| 4,510.00              | 1.08            | 303.76      | 4,509.51              | 38.08       | -43.24      | -53.45                  | 0.06                    | 0.01                   | 3.34                  |
| 4,610.00              | 1.10            | 307.10      | 4,609.50              | 39.18       | -44.79      | -55.13                  | 0.07                    | 0.02                   | 3.34                  |
| 4,710.00              | 0.87            | 335.18      | 4,709.48              | 40.45       | -45.88      | -56.76                  | 0.53                    | -0.23                  | 24.09                 |
| 4,810.00              | 0.85            | 23.88       | 4,809.47              | 41.81       | -45.90      | -57.98                  | 0.71                    | -0.02                  | 48.70                 |
| 4,910.00              | 0.69            | 45.02       | 4,909.46              | 42.92       | -45.17      | -58.64                  | 0.32                    | -0.16                  | 21.14                 |
| 5,010.00              | 0.87            | 54.29       | 5,009.46              | 43.68       | -44.27      | -58.92                  | 0.11                    | -0.02                  | 9.27                  |
| 5,110.00              | 0.64            | 52.24       | 5,109.45              | 44.37       | -43.35      | -59.12                  | 0.04                    | -0.03                  | -2.05                 |
| 5,210.00              | 0.74            | 65.96       | 5,209.44              | 44.97       | -42.32      | -59.20                  | 0.19                    | 0.10                   | 13.72                 |

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# Professional Directional Survey Report



**Company:** EQT PRODUCTION  
**Project:** Marion County, WV  
**Site:** GLO76 Pad  
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**Wellbore:** Main Wellbore  
**Design:** 514745 As Drilled Surveys

**Local Co-ordinate Reference:** Well Well #514745- Marcellus - Slot 514745  
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**MD Reference:** GL 1424 + 23' KB @ 1447 00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Well\_Planner1

## Survey

| Measured Depth (usft)           | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N-S (usft) | +E-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|---------------------------------|-----------------|-------------|-----------------------|-------------|-------------|-------------------------|-------------------------|------------------------|-----------------------|
| 5,310.00                        | 0.74            | 91.38       | 5,309.43              | 45.22       | -41.09      | -58.86                  | 0.33                    | 0.00                   | 25.42                 |
| 5,410.00                        | 0.61            | 107.41      | 5,409.43              | 45.05       | -39.93      | -58.19                  | 0.23                    | -0.13                  | 16.03                 |
| 5,510.00                        | 0.35            | 106.94      | 5,509.42              | 44.80       | -39.13      | -57.61                  | 0.26                    | -0.26                  | -0.47                 |
| 5,610.00                        | 0.33            | 99.67       | 5,609.42              | 44.66       | -38.56      | -57.23                  | 0.05                    | -0.02                  | -7.27                 |
| 5,710.00                        | 0.37            | 89.35       | 5,709.42              | 44.62       | -37.95      | -56.91                  | 0.07                    | 0.04                   | -10.32                |
| 5,810.00                        | 0.58            | 91.13       | 5,809.42              | 44.61       | -37.12      | -56.54                  | 0.21                    | 0.21                   | 1.78                  |
| 5,910.00                        | 0.90            | 92.48       | 5,909.41              | 44.57       | -35.83      | -55.92                  | 0.32                    | 0.32                   | 1.35                  |
| 6,010.00                        | 0.80            | 95.32       | 6,009.40              | 44.47       | -34.35      | -55.16                  | 0.11                    | -0.10                  | 2.84                  |
| 6,110.00                        | 0.58            | 89.64       | 6,109.39              | 44.40       | -33.15      | -54.57                  | 0.23                    | -0.22                  | -5.68                 |
| 6,210.00                        | 0.35            | 118.86      | 6,209.39              | 44.26       | -32.37      | -54.09                  | 0.32                    | -0.23                  | 29.22                 |
| 6,310.00                        | 0.40            | 174.80      | 6,309.39              | 43.77       | -32.08      | -53.51                  | 0.35                    | 0.05                   | 55.94                 |
| <b>Tie into Gyro at 6310'MD</b> |                 |             |                       |             |             |                         |                         |                        |                       |
| 6,438.00                        | 2.70            | 321.10      | 6,437.34              | 45.67       | -33.93      | -56.05                  | 2.38                    | 1.80                   | 114.30                |
| <b>First PromWd at 6438'MD</b>  |                 |             |                       |             |             |                         |                         |                        |                       |
| 6,469.00                        | 6.20            | 331.10      | 6,468.24              | 47.70       | -35.20      | -58.43                  | 11.52                   | 11.29                  | 32.26                 |
| 6,501.00                        | 8.60            | 333.50      | 6,499.98              | 51.36       | -37.10      | -62.55                  | 7.56                    | 7.50                   | 7.50                  |
| 6,533.00                        | 10.30           | 334.20      | 6,531.54              | 56.07       | -39.41      | -67.81                  | 5.32                    | 5.31                   | 2.19                  |
| 6,564.00                        | 12.30           | 335.60      | 6,561.94              | 61.58       | -41.98      | -73.88                  | 6.51                    | 6.45                   | 4.52                  |
| 6,596.00                        | 14.00           | 337.60      | 6,593.10              | 68.26       | -44.87      | -81.14                  | 5.50                    | 5.31                   | 6.25                  |
| 6,627.00                        | 14.30           | 342.10      | 6,623.16              | 75.37       | -47.47      | -88.67                  | 3.68                    | 0.97                   | 14.52                 |
| 6,659.00                        | 15.60           | 344.80      | 6,654.07              | 83.28       | -49.81      | -96.79                  | 4.61                    | 4.06                   | 8.44                  |
| 6,691.00                        | 18.40           | 346.90      | 6,684.67              | 92.36       | -52.09      | -105.91                 | 8.96                    | 8.75                   | 6.56                  |
| 6,722.00                        | 21.20           | 349.30      | 6,713.84              | 102.63      | -54.24      | -116.06                 | 9.40                    | 9.03                   | 7.74                  |
| 6,754.00                        | 22.50           | 350.00      | 6,743.54              | 114.35      | -56.36      | -127.48                 | 4.14                    | 4.06                   | 2.19                  |
| 6,785.00                        | 20.50           | 349.70      | 6,772.38              | 125.53      | -58.38      | -138.37                 | 6.46                    | -6.45                  | -0.97                 |
| 6,817.00                        | 18.10           | 350.20      | 6,802.58              | 135.94      | -60.22      | -148.51                 | 7.52                    | -7.50                  | 1.56                  |
| 6,848.00                        | 15.20           | 352.40      | 6,832.28              | 144.72      | -61.58      | -156.95                 | 9.57                    | -9.35                  | 7.10                  |
| 6,880.00                        | 12.50           | 355.00      | 6,863.34              | 152.33      | -62.44      | -164.14                 | 8.66                    | -8.44                  | 8.13                  |
| 6,911.00                        | 9.70            | 354.40      | 6,893.76              | 158.27      | -62.99      | -169.69                 | 9.04                    | -9.03                  | -1.94                 |
| 6,943.00                        | 6.60            | 350.40      | 6,925.44              | 162.77      | -63.56      | -173.96                 | 9.84                    | -9.69                  | -12.50                |
| 6,975.00                        | 3.50            | 341.70      | 6,957.31              | 165.51      | -64.17      | -176.69                 | 9.95                    | -9.69                  | -27.19                |
| 7,006.00                        | 1.60            | 323.60      | 6,988.28              | 166.76      | -64.72      | -178.05                 | 6.58                    | -6.13                  | -58.39                |
| 7,038.00                        | 1.00            | 200.50      | 7,020.27              | 166.85      | -65.09      | -178.30                 | 7.20                    | -1.88                  | -384.69               |
| 7,069.00                        | 1.80            | 179.50      | 7,051.26              | 166.11      | -65.18      | -177.68                 | 3.02                    | 2.58                   | -67.74                |
| 7,101.00                        | 1.60            | 183.10      | 7,083.25              | 165.17      | -65.20      | -176.84                 | 0.71                    | -0.63                  | 11.25                 |
| 7,132.00                        | 1.20            | 181.30      | 7,114.24              | 164.41      | -65.23      | -176.18                 | 1.30                    | -1.29                  | -5.81                 |
| 7,164.00                        | 2.60            | 171.80      | 7,146.22              | 163.36      | -65.13      | -175.20                 | 4.47                    | 4.36                   | 20.00                 |
| 7,195.00                        | 4.60            | 162.20      | 7,177.16              | 161.48      | -64.65      | -173.30                 | 6.72                    | 6.45                   | 30.97                 |
| 7,227.00                        | 7.00            | 154.40      | 7,208.99              | 158.49      | -63.42      | -170.08                 | 7.88                    | 7.50                   | 24.38                 |
| 7,259.00                        | 9.70            | 151.60      | 7,240.65              | 154.36      | -61.29      | -165.44                 | 8.53                    | 8.44                   | MAY 27 2016           |
| 7,290.00                        | 12.10           | 151.70      | 7,271.09              | 149.21      | -58.51      | -159.58                 | 7.74                    | 7.74                   | 0.32                  |
| 7,322.00                        | 14.40           | 152.60      | 7,302.23              | 142.72      | -55.09      | -152.25                 | 7.22                    | 7.19                   | 2.81                  |
| 7,353.00                        | 17.50           | 151.60      | 7,332.04              | 135.19      | -51.10      | -143.73                 | 10.04                   | 10.00                  | -3.23                 |
| 7,385.00                        | 20.30           | 150.10      | 7,362.31              | 126.15      | -46.04      | -133.38                 | 8.68                    | 8.75                   | -4.69                 |

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# Professional Directional Survey Report



**Company:** EQT PRODUCTION  
**Project:** Marion County, WV  
**Site:** GLO76 Pad  
**Well:** Well #514745- Marcellus  
**Wellbore:** Main Wellbore  
**Design:** 514745 As Drilled Surveys

**Local Co-ordinate Reference:** Well Well #514745- Marcellus - Slot 514745  
**TVD Reference:** GL 1424 + 23' KB @ 1447 00usft  
**MD Reference:** GL 1424 + 23' KB @ 1447 00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Well\_Planner1

## Survey

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 7,416.00              | 23.30           | 151.10      | 7,391.09              | 116.12       | -40.39       | -121.88                 | 9.75                    | 9.68                   | 3.23                  |
| 7,448.00              | 26.20           | 154.30      | 7,420.15              | 104.21       | -34.27       | -108.49                 | 9.98                    | 9.06                   | 10.00                 |
| 7,479.00              | 29.20           | 155.50      | 7,447.59              | 91.16        | -28.17       | -94.09                  | 9.84                    | 9.68                   | 3.87                  |
| 7,511.00              | 32.70           | 155.70      | 7,475.03              | 76.17        | -21.37       | -77.65                  | 10.94                   | 10.94                  | 0.63                  |
| 7,542.00              | 35.80           | 155.20      | 7,500.65              | 60.31        | -14.12       | -60.21                  | 10.04                   | 10.00                  | -1.61                 |
| 7,574.00              | 39.30           | 153.60      | 7,526.02              | 42.73        | -5.68        | -40.72                  | 11.35                   | 10.94                  | -5.00                 |
| 7,605.00              | 43.40           | 152.30      | 7,549.29              | 24.50        | 3.64         | -20.24                  | 13.51                   | 13.23                  | -4.19                 |
| 7,636.00              | 47.60           | 152.50      | 7,571.01              | 4.90         | 13.88        | 1.86                    | 13.56                   | 13.55                  | 0.65                  |
| 7,668.00              | 51.70           | 153.20      | 7,591.72              | -16.79       | 25.00        | 26.24                   | 12.92                   | 12.81                  | 2.19                  |
| 7,699.00              | 55.30           | 154.20      | 7,610.16              | -39.13       | 36.03        | 51.15                   | 11.90                   | 11.61                  | 3.23                  |
| 7,731.00              | 59.90           | 154.10      | 7,627.30              | -63.44       | 47.81        | 78.16                   | 14.38                   | 14.38                  | -0.31                 |
| 7,763.00              | 63.60           | 153.70      | 7,642.45              | -88.75       | 60.21        | 106.34                  | 11.61                   | 11.56                  | -1.25                 |
| 7,794.00              | 66.60           | 153.40      | 7,655.50              | -113.92      | 72.74        | 134.46                  | 9.72                    | 9.68                   | -0.97                 |
| 7,826.00              | 69.30           | 153.40      | 7,667.51              | -140.44      | 86.01        | 164.12                  | 8.44                    | 8.44                   | 0.00                  |
| 7,857.00              | 72.20           | 153.60      | 7,677.73              | -166.63      | 99.07        | 193.38                  | 9.37                    | 9.35                   | 0.65                  |
| 7,889.00              | 74.70           | 153.70      | 7,686.84              | -194.11      | 112.68       | 224.05                  | 7.82                    | 7.81                   | 0.31                  |
| 7,920.00              | 77.00           | 153.90      | 7,694.42              | -221.08      | 125.95       | 254.11                  | 7.45                    | 7.42                   | 0.65                  |
| 7,952.00              | 78.70           | 153.70      | 7,701.16              | -249.15      | 139.77       | 285.39                  | 5.35                    | 5.31                   | -0.63                 |
| 7,983.00              | 80.50           | 154.00      | 7,706.75              | -276.52      | 153.20       | 315.88                  | 5.88                    | 5.81                   | 0.97                  |
| 8,015.00              | 81.80           | 153.40      | 7,711.68              | -304.86      | 167.21       | 347.49                  | 4.46                    | 4.06                   | -1.88                 |
| 8,046.00              | 81.80           | 153.10      | 7,716.10              | -332.26      | 181.02       | 378.18                  | 0.96                    | 0.00                   | -0.97                 |
| 8,078.00              | 82.20           | 152.30      | 7,720.55              | -360.42      | 195.56       | 409.86                  | 2.77                    | 1.25                   | -2.50                 |
| 8,109.00              | 83.90           | 152.60      | 7,724.30              | -387.70      | 209.79       | 440.63                  | 5.57                    | 5.48                   | 0.97                  |
| 8,141.00              | 85.70           | 152.90      | 7,727.20              | -416.03      | 224.38       | 472.50                  | 5.70                    | 5.63                   | 0.94                  |
| 8,173.00              | 86.60           | 152.60      | 7,729.35              | -444.42      | 239.00       | 504.42                  | 2.96                    | 2.81                   | -0.94                 |
| 8,204.00              | 87.60           | 152.80      | 7,730.92              | -471.93      | 253.20       | 535.38                  | 3.29                    | 3.23                   | 0.65                  |
| 8,236.00              | 87.90           | 152.80      | 7,732.17              | -500.37      | 267.81       | 567.35                  | 0.94                    | 0.94                   | 0.00                  |
| 8,331.00              | 88.90           | 152.90      | 7,734.83              | -584.87      | 311.15       | 662.31                  | 1.06                    | 1.05                   | 0.11                  |
| 8,425.00              | 89.20           | 152.80      | 7,736.39              | -668.50      | 354.04       | 756.30                  | 0.34                    | 0.32                   | -0.11                 |
| 8,520.00              | 89.40           | 153.50      | 7,737.55              | -753.25      | 396.94       | 851.29                  | 0.77                    | 0.21                   | 0.74                  |
| 8,615.00              | 89.20           | 153.40      | 7,738.71              | -838.22      | 439.40       | 946.28                  | 0.24                    | -0.21                  | -0.11                 |
| 8,710.00              | 89.20           | 153.30      | 7,740.03              | -923.12      | 482.01       | 1,041.27                | 0.11                    | 0.00                   | -0.11                 |
| 8,805.00              | 88.40           | 153.50      | 7,742.02              | -1,008.05    | 524.53       | 1,136.25                | 0.87                    | -0.84                  | 0.21                  |
| 8,900.00              | 87.70           | 154.10      | 7,745.26              | -1,093.24    | 566.45       | 1,231.19                | 0.97                    | -0.74                  | 0.63                  |
| 8,995.00              | 87.40           | 154.10      | 7,749.32              | -1,178.62    | 607.91       | 1,326.09                | 0.32                    | -0.32                  |                       |
| 9,089.00              | 87.70           | 154.10      | 7,753.33              | -1,263.10    | 648.93       | 1,420.00                | 0.32                    | 0.32                   |                       |
| 9,184.00              | 87.60           | 154.50      | 7,757.23              | -1,348.63    | 690.10       | 1,514.90                | 0.43                    | -0.11                  |                       |
| 9,279.00              | 88.10           | 154.20      | 7,760.79              | -1,434.21    | 731.19       | 1,609.82                | 0.61                    | 0.53                   |                       |
| 9,374.00              | 88.50           | 154.20      | 7,763.61              | -1,519.70    | 772.52       | 1,704.77                | 0.42                    | 0.42                   |                       |
| 9,469.00              | 88.20           | 153.60      | 7,766.35              | -1,604.98    | 814.29       | 1,799.72                | 0.71                    | -0.32                  | -0.63                 |
| 9,563.00              | 88.10           | 152.10      | 7,769.38              | -1,688.57    | 857.17       | 1,893.67                | 1.60                    | -0.11                  | -1.60                 |
| 9,658.00              | 90.50           | 153.40      | 7,770.54              | -1,773.01    | 900.66       | 1,988.65                | 2.87                    | 2.53                   | 1.37                  |
| 9,753.00              | 90.70           | 151.90      | 7,769.55              | -1,857.39    | 944.30       | 2,083.63                | 1.59                    | 0.21                   | -1.58                 |

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## Professional Directional Survey Report



|                  |                           |                                     |  |
|------------------|---------------------------|-------------------------------------|--|
| <b>Company:</b>  | EQT PRODUCTION            | <b>Local Co-ordinate Reference:</b> | Well Well #514745- Marcellus - Slot 514745 |
| <b>Project:</b>  | Marion County, WV         | <b>TVD Reference:</b>               | GL 1424 + 23' KB @ 1447 00usft             |
| <b>Site:</b>     | GLO76 Pad                 | <b>MD Reference:</b>                | GL 1424 + 23' KB @ 1447 00usft             |
| <b>Well:</b>     | Well #514745- Marcellus   | <b>North Reference:</b>             | Grd  |
| <b>Wellbore:</b> | Main Wellbore             | <b>Survey Calculation Method:</b>   | Minimum Curvature                          |
| <b>Design:</b>   | 514745 As Drilled Surveys | <b>Database:</b>                    | Well_Planner1                              |

| Survey                                     |                    |                |                             |                 |                 |                               |                               |                              |                             |
|--|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|
| Measured<br>Depth<br>(usft)                | Inclination<br>(°) | Azimuth<br>(°) | Vertical<br>Depth<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Vertical<br>Section<br>(usft) | Dogleg<br>Rate<br>(°/100usft) | Build<br>Rate<br>(°/100usft) | Turn<br>Rate<br>(°/100usft) |
| 9,847.00                                   | 91.40              | 151.40         | 7,767.83                    | -1,940.10       | 988.93          | 2,177.58                      | 0.92                          | 0.74                         | -0.53                       |
| 9,942.00                                   | 90.90              | 152.90         | 7,765.92                    | -2,024.08       | 1,033.30        | 2,272.54                      | 1.66                          | -0.53                        | 1.58                        |
| 10,037.00                                  | 89.70              | 153.50         | 7,765.42                    | -2,108.87       | 1,076.13        | 2,367.53                      | 1.41                          | -1.26                        | 0.63                        |
| 10,132.00                                  | 89.40              | 154.60         | 7,766.17                    | -2,194.29       | 1,117.70        | 2,462.52                      | 1.20                          | -0.32                        | 1.16                        |
| 10,226.00                                  | 89.40              | 153.80         | 7,767.15                    | -2,278.91       | 1,158.61        | 2,556.50                      | 0.85                          | 0.00                         | -0.85                       |
| 10,321.00                                  | 89.70              | 153.50         | 7,767.90                    | -2,364.04       | 1,200.77        | 2,651.50                      | 0.45                          | 0.32                         | -0.32                       |
| 10,416.00                                  | 89.70              | 153.30         | 7,768.40                    | -2,448.98       | 1,243.31        | 2,746.49                      | 0.21                          | 0.00                         | -0.21                       |
| 10,510.00                                  | 89.90              | 152.10         | 7,768.72                    | -2,532.51       | 1,286.42        | 2,840.49                      | 1.29                          | 0.21                         | -1.28                       |
| 10,605.00                                  | 89.20              | 153.50         | 7,769.47                    | -2,617.00       | 1,329.84        | 2,935.48                      | 1.65                          | -0.74                        | 1.47                        |
| 10,700.00                                  | 89.40              | 153.50         | 7,770.63                    | -2,702.01       | 1,372.23        | 3,030.47                      | 0.21                          | 0.21                         | 0.00                        |
| 10,794.00                                  | 89.20              | 153.40         | 7,771.78                    | -2,786.09       | 1,414.24        | 3,124.46                      | 0.24                          | -0.21                        | -0.11                       |
| 10,889.00                                  | 89.60              | 153.80         | 7,772.77                    | -2,871.18       | 1,456.48        | 3,219.46                      | 0.60                          | 0.42                         | 0.42                        |
| 10,983.00                                  | 89.50              | 154.40         | 7,773.51                    | -2,955.74       | 1,497.53        | 3,313.44                      | 0.65                          | -0.11                        | 0.64                        |
| 11,078.00                                  | 88.20              | 154.80         | 7,775.42                    | -3,041.53       | 1,538.27        | 3,408.40                      | 1.43                          | -1.37                        | 0.42                        |
| 11,173.00                                  | 88.50              | 154.40         | 7,778.15                    | -3,127.31       | 1,579.01        | 3,503.33                      | 0.53                          | 0.32                         | -0.42                       |
| 11,267.00                                  | 88.80              | 153.30         | 7,780.37                    | -3,211.67       | 1,620.42        | 3,597.30                      | 1.21                          | 0.32                         | -1.17                       |
| 11,362.00                                  | 89.70              | 152.60         | 7,781.61                    | -3,296.27       | 1,663.62        | 3,692.29                      | 1.20                          | 0.95                         | -0.74                       |
| 11,457.00                                  | 90.40              | 152.20         | 7,781.53                    | -3,380.46       | 1,707.63        | 3,787.28                      | 0.85                          | 0.74                         | -0.42                       |
| 11,551.00                                  | 91.40              | 151.60         | 7,780.05                    | -3,463.36       | 1,751.90        | 3,881.24                      | 1.24                          | 1.06                         | -0.64                       |
| 11,646.00                                  | 88.90              | 154.00         | 7,779.80                    | -3,547.85       | 1,795.32        | 3,976.22                      | 3.65                          | -2.63                        | 2.53                        |
| 11,740.00                                  | 88.80              | 153.40         | 7,781.69                    | -3,632.10       | 1,838.96        | 4,070.20                      | 0.65                          | -0.11                        | -0.64                       |
| 11,835.00                                  | 89.70              | 154.00         | 7,782.93                    | -3,717.26       | 1,879.05        | 4,165.18                      | 1.14                          | 0.95                         | 0.63                        |
| 11,930.00                                  | 87.70              | 154.90         | 7,785.09                    | -3,802.94       | 1,920.01        | 4,260.13                      | 2.31                          | -2.11                        | 0.95                        |
| 12,024.00                                  | 87.80              | 154.60         | 7,788.78                    | -3,887.89       | 1,960.07        | 4,354.03                      | 0.34                          | 0.11                         | -0.32                       |
| 12,119.00                                  | 88.60              | 153.90         | 7,791.76                    | -3,973.41       | 2,001.33        | 4,448.97                      | 1.12                          | 0.84                         | -0.74                       |
| 12,214.00                                  | 89.00              | 154.10         | 7,793.75                    | -4,058.78       | 2,042.96        | 4,543.94                      | 0.47                          | 0.42                         | 0.21                        |
| 12,308.00                                  | 90.20              | 154.60         | 7,794.41                    | -4,143.51       | 2,083.65        | 4,637.92                      | 1.38                          | 1.28                         | 0.53                        |
| 12,403.00                                  | 88.80              | 154.10         | 7,795.24                    | -4,229.15       | 2,124.77        | 4,732.90                      | 1.56                          | -1.47                        | -0.53                       |
| 12,498.00                                  | 88.60              | 154.80         | 7,797.39                    | -4,314.83       | 2,165.73        | 4,827.85                      | 0.77                          | -0.21                        | 0.74                        |
| 12,547.00                                  | 88.80              | 154.40         | 7,798.51                    | -4,359.08       | 2,186.74        | 4,876.83                      | 0.91                          | 0.41                         | -0.82                       |
| <b>Last Survey: 12547'MD / 7798.51'TVD</b> |                    |                |                             |                 |                 |                               |                               |                              |                             |
| 12,600.00                                  | 88.80              | 154.40         | 7,799.62                    | -4,406.87       | 2,209.64        | 4,929.80                      | 0.00                          | 0.00                         | 0.00                        |
| <b>PTB: 12600'MD</b>                       |                    |                |                             |                 |                 |                               |                               |                              |                             |

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Professional Directional  
Survey Report



**Company:** EQT PRODUCTION  
**Project:** Marion County, WV  
**Site:** GLO76 Pad  
**Well:** Well #514745- Marcellus  
**Wellbore:** Main Wellbore  
**Design:** 514745 As Drilled Surveys

**Local Co-ordinate Reference:** Well Well #514745- Marcellus - Slot 514745  
**TVD Reference:** GL 1424 + 23' KB @ 1447 00usft  
**MD Reference:** GL 1424 + 23' KB @ 1447 00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Well\_Planner1

**Design Targets**

| Target Name<br>- hit/miss target<br>- Shape  | Dip Angle<br>(°) | Dip Dir.<br>(°) | TVD<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Northing<br>(usft) | Easting<br>(usft) | Latitude        | Longitude       |
|--|------------------|-----------------|---------------|-----------------|-----------------|--------------------|-------------------|-----------------|-----------------|
| 514745 Plat TD 2<br>- actual wellpath misses target center by 130.94usft at 12600.00usft MD (7799.62 TVD, -4406.87 N, 2209.64 E)<br>- Point  | 0.00             | 360.00          | 7,670.00      | -4,418.20       | 2,224.40        | 384,639.50         | 1,723,254.40      | 39° 33' 6.88 N  | 80° 28' 53.29 W |
| 514745 LP 400' VS 2<br>- actual wellpath misses target center by 48.71usft at 8060.97usft MD (7718.21 TVD, -345.48 N, 187.77 E)<br>- Point   | 0.00             | 360.00          | 7,670.00      | -350.77         | 192.26          | 388,706.93         | 1,721,222.26      | 39° 33' 46.85 N | 80° 29' 19.80 W |
| 514745 Plat LP<br>- actual wellpath misses target center by 76.08usft at 7722.13usft MD (7622.77 TVD, -56.58 N, 44.48 E)<br>- Point          | 0.00             | 360.00          | 7,687.00      | -19.80          | 26.90           | 389,037.90         | 1,721,056.90      | 39° 33' 50.11 N | 80° 29' 21.96 W |
| 514745 Plat TD<br>- actual wellpath misses target center by 112.88usft at 12597.47usft MD (7799.56 TVD, -4404.59 N, 2208.55 E)<br>- Point    | 0.00             | 360.00          | 7,687.00      | -4,403.20       | 2,216.90        | 384,654.50         | 1,723,246.90      | 39° 33' 7.02 N  | 80° 28' 53.38 W |
| 514745 LP 400' VS p4<br>- actual wellpath misses target center by 28.90usft at 8063.61usft MD (7718.57 TVD, -347.78 N, 188.97 E)<br>- Point  | 0.00             | 360.00          | 7,690.00      | -350.60         | 192.26          | 388,707.10         | 1,721,222.26      | 39° 33' 46.86 N | 80° 29' 19.80 W |
| 514745 Plat TD p4<br>- actual wellpath misses target center by 111.18usft at 12600.00usft MD (7799.62 TVD, -4406.87 N, 2209.64 E)<br>- Point | 0.00             | 360.00          | 7,690.00      | -4,418.20       | 2,224.40        | 384,639.50         | 1,723,254.40      | 39° 33' 6.88 N  | 80° 28' 53.29 W |
| 514745 Plat LP p5<br>- actual wellpath misses target center by 99.29usft at 7731.00usft MD (7627.30 TVD, -63.44 N, 47.81 E)<br>- Point       | 0.00             | 360.00          | 7,714.00      | -19.80          | 26.90           | 389,037.90         | 1,721,056.90      | 39° 33' 50.11 N | 80° 29' 21.96 W |
| 514745 Plat TD p5<br>- actual wellpath misses target center by 87.61usft at 12600.00usft MD (7799.62 TVD, -4406.87 N, 2209.64 E)<br>- Point  | 0.00             | 360.00          | 7,714.00      | -4,418.20       | 2,224.40        | 384,639.50         | 1,723,254.40      | 39° 33' 6.88 N  | 80° 28' 53.29 W |
| 514745 LP 397' VS p5<br>- actual wellpath misses target center by 4.88usft at 8063.95usft MD (7718.62 TVD, -348.08 N, 189.13 E)<br>- Point   | 0.00             | 360.00          | 7,714.00      | -348.00         | 190.70          | 388,709.70         | 1,721,220.70      | 39° 33' 46.88 N | 80° 29' 19.82 W |

**Design Annotations**

| Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Local Coordinates |                 | Comment                             |
|-----------------------------|-----------------------------|-------------------|-----------------|-------------------------------------|
|                             |                             | +N/-S<br>(usft)   | +E/-W<br>(usft) |                                     |
| 6,310.00                    | 6,309.39                    | 43.77             | -32.08          | Tie into Gyro at 6310'MD            |
| 6,438.00                    | 6,437.34                    | 45.67             | -33.93          | First ProMWD at 6438'MD             |
| 12,547.00                   | 7,798.51                    | -4,359.08         | 2,186.74        | Last Survey: 12547'MD / 7798.51'TVD |
| 12,600.00                   | 7,799.62                    | -4,406.87         | 2,209.64        | PTB: 12600'MD                       |

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Where energy meets innovation.

**EQT PRODUCTION**  
**GLO78 Pad**  
 Marion County, WV  
 Well #514745- Marcellus  
**Plan 7 - AVP FINAL (Grd)**  
 GL 1424 + 23' KB @ 1447.00ust



**PRO-DIRECTIONAL**

Geologic System: US State Plane 1987 (East datum)  
 Datum: NAD 1987 (NADCON CONUS)  
 Ellipsoid: Clarke 1858  
 Projection: UTM  
 System Datum: Mean Sea Level

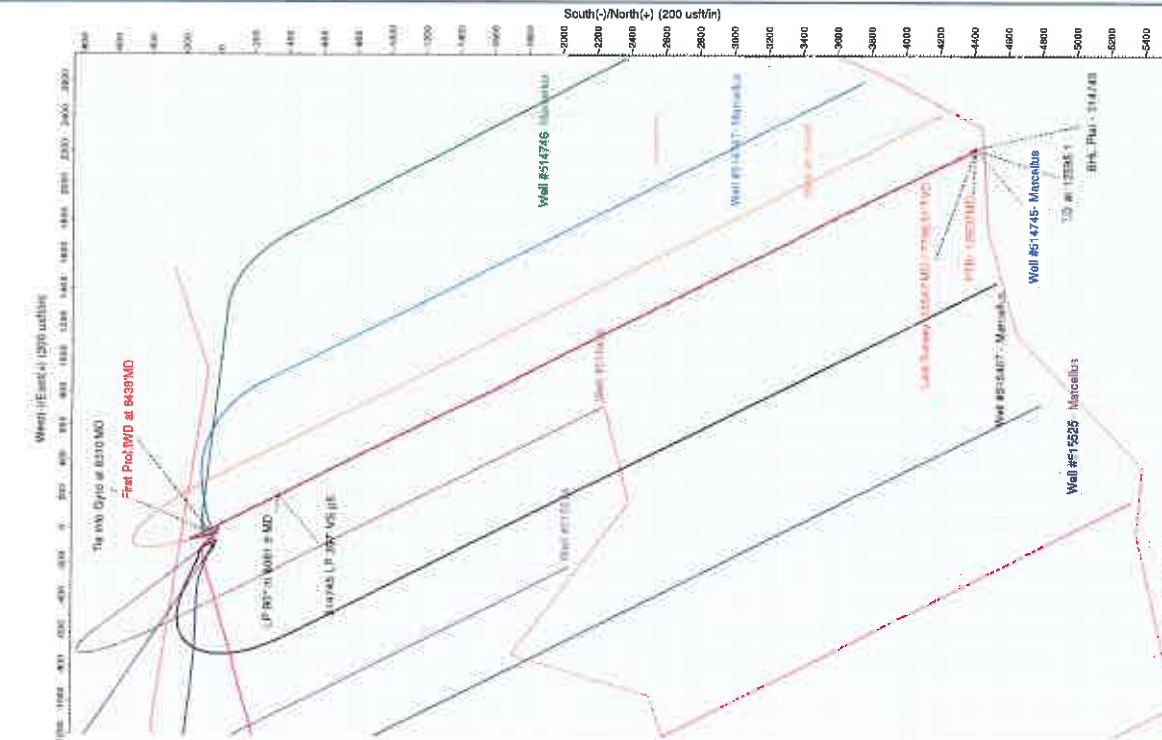
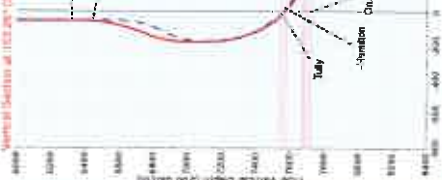
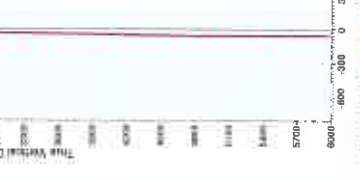
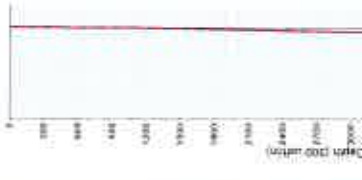
RKB Elevation: GL 1424 + 23' KB @ 1447.00ust  
 Northing: 388657.70  
 Easting: 1721089.06  
 Latitude: 39° 39' 56.32" N  
 Longitude: 80° 39' 22.31" W  
 SIK: 514745



**Azimuth Corrections**

To convert a magnetic direction to a Grid Direction, subtract 12.00°

| Station | From       | To         | Mag. Az. | Grid Az. | Dist.  | True Elev. | Mag. Elev. |
|---------|------------|------------|----------|----------|--------|------------|------------|
| 1       | 6310MD     | 6438MD     | 41.50    | 29.50    | 100.00 | 1447.00    | 1447.00    |
| 2       | 6438MD     | 12600MD    | 41.50    | 29.50    | 100.00 | 1447.00    | 1447.00    |
| 3       | 12600MD    | 7798.51TVD | 41.50    | 29.50    | 100.00 | 1447.00    | 1447.00    |
| 4       | 7798.51TVD | 12547MD    | 41.50    | 29.50    | 100.00 | 1447.00    | 1447.00    |
| 5       | 12547MD    | 12547MD    | 41.50    | 29.50    | 100.00 | 1447.00    | 1447.00    |



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