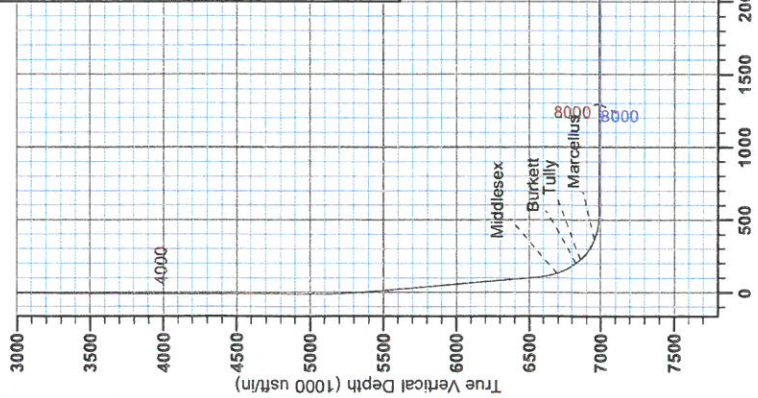




**Antero Resources**  
**Josie Unit 1H**  
**Doddridge County WV**  
**Northing: 14238715.30**  
**Easting: 1734937.59**  
**As Drilled**



**WELL DETAILS: Josie Unit 1H**

|       |       |                  |              |                  |            |
|-------|-------|------------------|--------------|------------------|------------|
| +N/-S | +E/-W | Northing         | Ground Level | 076.0            | Stat       |
| 0.0   | 0.0   | 14238715.30      | Eastings     | 1734937.59       | 1734937.59 |
|       |       | 39° 12' 37.413 N | Longitude    | 80° 39' 58.707 W |            |

**REFERENCE INFORMATION**

Co-ordinates (N/E) Reference: Well Josie Unit 1H, Grid North  
 Section (V/S) Reference: Stat - (0.0N, 0.0E)  
 Measured Depth Reference: Josie Unit 1H 976' GL = 24' RKD @ 1000.0usft  
 Calculation Method: Minimum Curvature

**PROJECT DETAILS: Doddridge County WV**

Geodetic System: Universal Transverse Mercator (US Survey Feet)  
 Datum: NAD 1983 (NAD80 CONUS)  
 Zone: Zone 17N (84 W to 78 W)  
 System Datum: Mean Sea Level

Genie Lightfoot  
 9:16, October 22 2013  
 Scientific Drilling  
 421 South Eagle Lane  
 Oklahoma City, OK

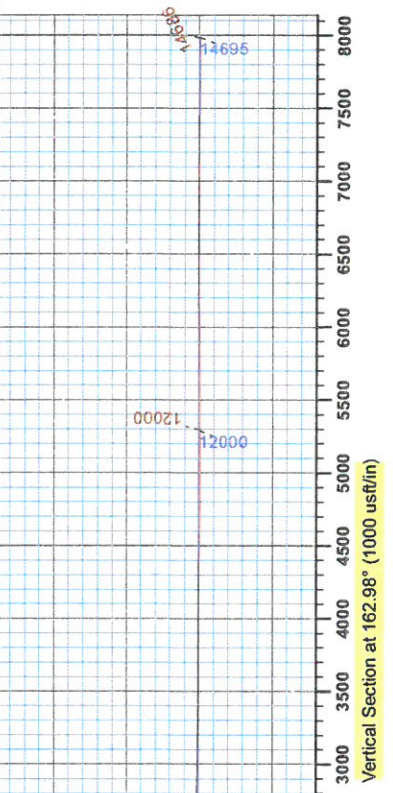


**LEGEND**

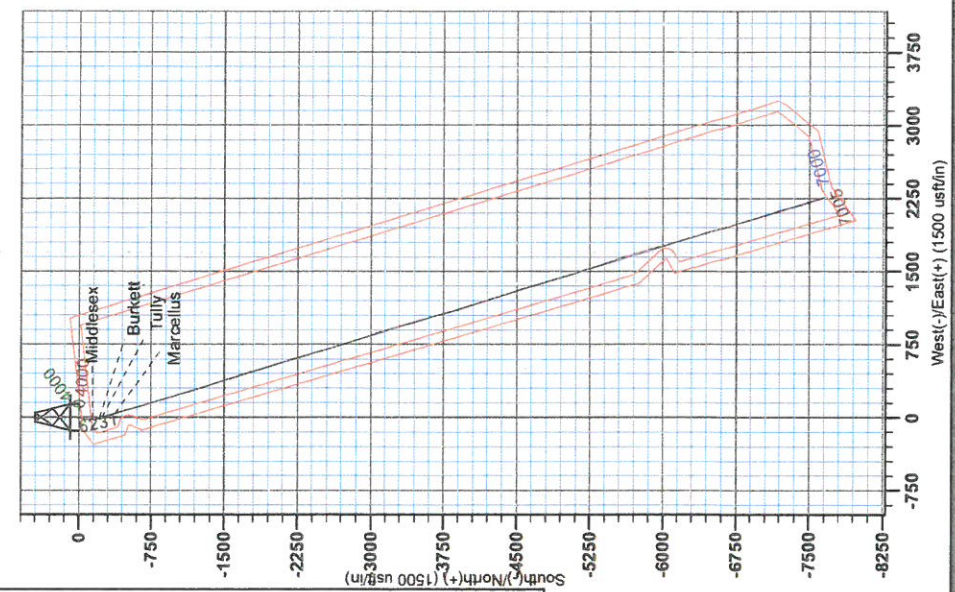
- △ Josie Unit 2H, Original Wellpath, As Drilled V0
- △ Josie Unit 1H, Original Wellpath, Plan 4 V0
- As Drilled

**DESIGN TARGET DETAILS**

| Name                     | TVD    | +N/-S   | +E/-W | Northing        | Eastings   | Latitude           | Longitude        |
|--------------------------|--------|---------|-------|-----------------|------------|--------------------|------------------|
| SHL Josie Unit 1H        | 0.0    | 0.0     | 0.0   | 014238715.30    | 1734937.59 | 39° 12' 37.413 N   | 80° 39' 58.707 W |
| Actual BHL Josie Unit 1H | 7004.8 | -7655.6 |       | 2255.2142310569 | 69.1737192 | 8139° 11' 21.634 N | 80° 39' 58.411 W |



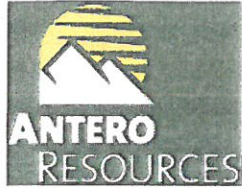
Asimuth to Grid North  
 True North: 0.21°  
 Magnetic North: -8.72°  
 Magnetic Field  
 Strength: 53330.9nT  
 Dip Angle: 66.80°  
 Date: 10/20/13  
 Model: IGRF2010



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WV GEOLOGICAL SURVEY  
 MORGANTOWN, WV



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MORGANTOWN, WV

## Antero Resources

Doddridge County WV  
Josie/Swisher/Union Pad  
Josie Unit 1H  
Original Wellpath

Design: As Drilled

## EOW Completion Report

22 October, 2013

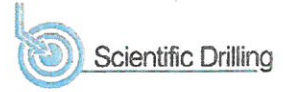


JUN 01 2015



WV GEOLOGICAL SURVEY  
MORGANTOWN, WV

EOW Completion Report



|                                      |  |
|--------------------------------------|--|
| <b>Company:</b> Antero Resources     | <b>Local Co-ordinate Reference:</b> Well Josie Unit 1H             |
| <b>Project:</b> Doddridge County WV  | <b>TVD Reference:</b> Josie Unit 1H 976' GL = 24' RKB @ 1000.0usft |
| <b>Site:</b> Josie/Swisher/Union Pad | <b>MD Reference:</b> Josie Unit 1H 976' GL = 24' RKB @ 1000.0usft  |
| <b>Well:</b> Josie Unit 1H           | <b>North Reference:</b> Grid                                       |
| <b>Wellbore:</b> Original Wellpath   | <b>Survey Calculation Method:</b> Minimum Curvature                |
| <b>Design:</b> As Drilled            | <b>Database:</b> Oklahoma District                                 |

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

|                                       |                         |                    |                          |                  |
|---------------------------------------|-------------------------|--------------------|--------------------------|------------------|
| <b>Site</b>                           | Josie/Swisher/Union Pad |                    |                          |                  |
| <b>Site Position:</b>                 | <b>Northing:</b>        | 14,238,711.36 usft | <b>Latitude:</b>         | 39° 12' 37.374 N |
| <b>From:</b> Map                      | <b>Easting:</b>         | 1,734,928.40 usft  | <b>Longitude:</b>        | 80° 39' 58.824 W |
| <b>Position Uncertainty:</b> 2.0 usft | <b>Slot Radius:</b>     | 13-3/16"           | <b>Grid Convergence:</b> | 0.21 °           |

|                             |                          |                            |                  |                                 |
|-----------------------------|--------------------------|----------------------------|------------------|---------------------------------|
| <b>Well</b>                 | Josie Unit 1H, Marcellus |                            |                  |                                 |
| <b>Well Position</b>        | <b>+N/-S</b>             | 0.0 usft                   | <b>Northing:</b> | 14,238,715.30 usft              |
|                             | <b>+E/-W</b>             | 0.0 usft                   | <b>Easting:</b>  | 1,734,937.59 usft               |
| <b>Position Uncertainty</b> | 2.0 usft                 | <b>Wellhead Elevation:</b> | 989.0 usft       | <b>Ground Level:</b> 976.0 usft |

|                  |                   |                    |                        |                      |                            |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| <b>Wellbore</b>  | Original Wellpath |                    |                        |                      |                            |
| <b>Magnetics</b> | <b>Model Name</b> | <b>Sample Date</b> | <b>Declination (°)</b> | <b>Dip Angle (°)</b> | <b>Field Strength (nT)</b> |
|                  | IGRF2010          | 9/22/2013          | -8.51                  | 66.80                | 52,331                     |

|                          |                                |                     |                      |                      |
|--------------------------|--------------------------------|---------------------|----------------------|----------------------|
| <b>Design</b>            | As Drilled                     |                     |                      |                      |
| <b>Audit Notes:</b>      |                                |                     |                      |                      |
| <b>Version:</b> 1.0      | <b>Phase:</b>                  | ACTUAL              | <b>Tie On Depth:</b> | 0.0                  |
| <b>Vertical Section:</b> | <b>Depth From (TVD) (usft)</b> | <b>+N/-S (usft)</b> | <b>+E/-W (usft)</b>  | <b>Direction (°)</b> |
|                          | 0.0                            | 0.0                 | 0.0                  | 162.98               |

|                       |                  |  |                     |  |
|-----------------------|------------------|--|---------------------|--|
| <b>Survey Program</b> | Date 10/22/2013  |  |                     |  |
| <b>From (usft)</b>    | <b>To (usft)</b> | <b>Survey (Wellbore)</b>                   | <b>Tool Name</b>    | <b>Description</b>                                 |
| 100.0                 | 2,600.0          | Survey #2 Def Gyro to Int (Original Wellpa | SDI Standard Keeper | Scientific Drilling Intl. Standard Wireline Keeper |
| 2,625.0               | 5,112.0          | Survey #4 Def Gyro 2 (Original Wellpath)   | SDI Standard Keeper | Scientific Drilling Intl. Standard Wireline Keeper |
| 5,125.0               | 6,467.1          | Survey #6 Final Gyro (Original Wellpath)   | SDI Standard Keeper | Scientific Drilling Intl. Standard Wireline Keeper |
| 6,512.0               | 14,686.0         | Survey #7 MWD (Original Wellpath)          | SDI MWD             | Scientific Drilling Intl. MWD - Standard ver 1.0.1 |

|               |                  |                |                          |                   |                   |                   |                      |                         |
|---------------|------------------|----------------|--------------------------|-------------------|-------------------|-------------------|----------------------|-------------------------|
| <b>Survey</b> | <b>MD (usft)</b> | <b>Inc (°)</b> | <b>Azi (azimuth) (°)</b> | <b>TVD (usft)</b> | <b>N/S (usft)</b> | <b>E/W (usft)</b> | <b>V. Sec (usft)</b> | <b>DLeg (°/100usft)</b> |
|               | 0.0              | 0.00           | 0.00                     | 0.0               | 0.0               | 0.0               | 0.0                  | 0.00                    |
|               | 100.0            | 0.91           | 295.43                   | 100.0             | 0.3               | -0.7              | -0.5                 | 0.91                    |
|               | 200.0            | 0.86           | 321.52                   | 200.0             | 1.3               | -1.9              | -1.8                 | 0.40                    |
|               | 300.0            | 0.64           | 326.77                   | 300.0             | 2.3               | -2.7              | -3.0                 | 0.23                    |
|               | 400.0            | 0.46           | 332.50                   | 400.0             | 3.1               | -3.2              | -3.9                 | 0.19                    |
|               | 500.0            | 0.33           | 332.65                   | 500.0             | 3.8               | -3.5              | -4.6                 | 0.13                    |
|               | 600.0            | 0.33           | 321.49                   | 600.0             | 4.2               | -3.8              | -5.2                 | 0.06                    |
|               | 700.0            | 0.23           | 304.11                   | 700.0             | 4.6               | -4.1              | -5.6                 | 0.13                    |
|               | 800.0            | 0.20           | 313.30                   | 800.0             | 4.8               | -4.4              | -5.9                 | 0.05                    |

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WV GEOLOGICAL SURVEY  
MORGANTOWN, WV

EOW Completion Report



**Company:** Antero Resources  
**Project:** Doddridge County WV  
**Site:** Josie/Swisher/Union Pad  
**Well:** Josie Unit 1H  
**Wellbore:** Original Wellpath  
**Design:** As Drilled

**Local Co-ordinate Reference:** Well Josie Unit 1H  
**TVD Reference:** Josie Unit 1H 976' GL = 24' RKB @ 1000.0usft  
**MD Reference:** Josie Unit 1H 976' GL = 24' RKB @ 1000.0usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Oklahoma District

Survey

| MD (usft) | Inc (°) | Azi (azimuth) (°) | TVD (usft) | N/S (usft) | E/W (usft) | V. Sec (usft) | DLeg (°/100usft) |
|-----------|---------|-------------------|------------|------------|------------|---------------|------------------|
| 900.0     | 0.10    | 263.81            | 900.0      | 4.9        | -4.6       | -6.1          | 0.15             |
| 1,000.0   | 0.15    | 291.18            | 1,000.0    | 5.0        | -4.9       | -6.2          | 0.08             |
| 1,100.0   | 0.11    | 299.18            | 1,100.0    | 5.1        | -5.1       | -6.3          | 0.04             |
| 1,200.0   | 0.04    | 269.43            | 1,200.0    | 5.1        | -5.2       | -6.4          | 0.08             |
| 1,300.0   | 0.04    | 199.19            | 1,300.0    | 5.1        | -5.2       | -6.4          | 0.05             |
| 1,400.0   | 0.09    | 358.61            | 1,400.0    | 5.1        | -5.2       | -6.4          | 0.13             |
| 1,500.0   | 0.07    | 95.55             | 1,500.0    | 5.2        | -5.2       | -6.5          | 0.12             |
| 1,600.0   | 0.04    | 159.54            | 1,600.0    | 5.1        | -5.1       | -6.4          | 0.06             |
| 1,700.0   | 0.08    | 119.61            | 1,700.0    | 5.1        | -5.0       | -6.3          | 0.06             |
| 1,800.0   | 0.09    | 77.70             | 1,800.0    | 5.1        | -4.9       | -6.3          | 0.06             |
| 1,900.0   | 0.08    | 84.52             | 1,900.0    | 5.1        | -4.8       | -6.3          | 0.01             |
| 2,000.0   | 0.14    | 132.16            | 2,000.0    | 5.0        | -4.6       | -6.1          | 0.10             |
| 2,100.0   | 0.09    | 148.45            | 2,100.0    | 4.9        | -4.5       | -6.0          | 0.06             |
| 2,200.0   | 0.20    | 97.72             | 2,200.0    | 4.8        | -4.2       | -5.8          | 0.16             |
| 2,300.0   | 0.19    | 93.43             | 2,300.0    | 4.7        | -3.9       | -5.7          | 0.02             |
| 2,400.0   | 0.14    | 115.20            | 2,400.0    | 4.7        | -3.6       | -5.5          | 0.08             |
| 2,500.0   | 0.20    | 96.20             | 2,500.0    | 4.6        | -3.3       | -5.4          | 0.08             |
| 2,600.0   | 0.29    | 71.34             | 2,600.0    | 4.7        | -2.9       | -5.3          | 0.14             |
| 2,625.0   | 0.27    | 63.59             | 2,625.0    | 4.7        | -2.8       | -5.3          | 0.17             |
| 2,649.7   | 0.08    | 58.92             | 2,649.7    | 4.7        | -2.8       | -5.3          | 0.77             |
| 2,675.0   | 0.14    | 48.44             | 2,675.0    | 4.8        | -2.7       | -5.4          | 0.25             |
| 2,700.0   | 0.11    | 27.24             | 2,700.0    | 4.8        | -2.7       | -5.4          | 0.22             |
| 2,724.7   | 0.05    | 124.44            | 2,724.6    | 4.8        | -2.7       | -5.4          | 0.51             |
| 2,749.7   | 0.17    | 18.81             | 2,749.6    | 4.9        | -2.6       | -5.4          | 0.76             |
| 2,773.9   | 0.11    | 13.24             | 2,773.9    | 4.9        | -2.6       | -5.5          | 0.25             |
| 2,798.7   | 0.19    | 14.40             | 2,798.6    | 5.0        | -2.6       | -5.5          | 0.32             |
| 2,824.5   | 0.13    | 358.38            | 2,824.5    | 5.1        | -2.6       | -5.6          | 0.29             |
| 2,849.7   | 0.23    | 5.98              | 2,849.7    | 5.1        | -2.6       | -5.7          | 0.41             |
| 2,875.0   | 0.23    | 344.69            | 2,874.9    | 5.2        | -2.6       | -5.8          | 0.34             |
| 2,899.3   | 0.28    | 349.94            | 2,899.2    | 5.3        | -2.6       | -5.9          | 0.23             |
| 2,924.6   | 0.42    | 331.76            | 2,924.6    | 5.5        | -2.7       | -6.0          | 0.70             |
| 2,949.8   | 0.42    | 330.20            | 2,949.8    | 5.6        | -2.8       | -6.2          | 0.05             |
| 2,974.2   | 0.48    | 330.56            | 2,974.2    | 5.8        | -2.9       | -6.4          | 0.25             |
| 2,999.5   | 0.39    | 334.16            | 2,999.5    | 6.0        | -3.0       | -6.6          | 0.37             |
| 3,024.7   | 0.41    | 336.37            | 3,024.7    | 6.1        | -3.0       | -6.8          | 0.10             |
| 3,049.4   | 0.49    | 342.82            | 3,049.4    | 6.3        | -3.1       | -6.9          | 0.38             |
| 3,073.7   | 0.42    | 344.74            | 3,073.7    | 6.5        | -3.1       | -7.1          | 0.29             |
| 3,099.9   | 0.39    | 342.63            | 3,099.9    | 6.7        | -3.2       | -7.3          | 0.13             |
| 3,123.7   | 0.30    | 347.11            | 3,123.7    | 6.8        | -3.2       | -7.5          | 0.39             |
| 3,149.9   | 0.29    | 357.69            | 3,149.9    | 7.0        | -3.3       | -7.6          | 0.21             |
| 3,174.2   | 0.22    | 6.46              | 3,174.2    | 7.1        | -3.3       | -7.7          | 0.33             |
| 3,199.5   | 0.21    | 1.17              | 3,199.4    | 7.2        | -3.2       | -7.8          | 0.09             |
| 3,224.8   | 0.22    | 16.10             | 3,224.7    | 7.2        | -3.2       | -7.9          | 0.22             |
| 3,249.6   | 0.18    | 53.41             | 3,249.5    | 7.3        | -3.2       | -7.9          | 0.54             |

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**WV GEOLOGICAL SURVEY  
MORGANTOWN, WV**

EOW Completion Report



**Company:** Antero Resources  
**Project:** Doddridge County WV  
**Site:** Josie/Swisher/Union Pad  
**Well:** Josie Unit 1H  
**Wellbore:** Original Wellpath  
**Design:** As Drilled

**Local Co-ordinate Reference:** Well Josie Unit 1H  
**TVD Reference:** Josie Unit 1H 976' GL = 24' RKB @ 1000.0usft  
**MD Reference:** Josie Unit 1H 976' GL = 24' RKB @ 1000.0usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Oklahoma District

**Survey**

| MD (usft) | Inc (°) | Azi (azimuth) (°) | TVD (usft) | N/S (usft) | E/W (usft) | V. Sec (usft) | DLeg (°/100usft) |
|-----------|---------|-------------------|------------|------------|------------|---------------|------------------|
| 3,273.9   | 0.25    | 50.25             | 3,273.9    | 7.4        | -3.1       | -8.0          | 0.29             |
| 3,298.8   | 0.21    | 59.87             | 3,298.8    | 7.4        | -3.0       | -8.0          | 0.22             |
| 3,324.0   | 0.23    | 40.42             | 3,324.0    | 7.5        | -3.0       | -8.0          | 0.31             |
| 3,348.8   | 0.20    | 58.33             | 3,348.7    | 7.6        | -2.9       | -8.1          | 0.30             |
| 3,374.0   | 0.22    | 69.42             | 3,374.0    | 7.6        | -2.8       | -8.1          | 0.18             |
| 3,399.1   | 0.17    | 53.65             | 3,399.1    | 7.6        | -2.7       | -8.1          | 0.29             |
| 3,424.4   | 0.18    | 56.04             | 3,424.4    | 7.7        | -2.7       | -8.1          | 0.05             |
| 3,449.7   | 0.18    | 17.02             | 3,449.6    | 7.7        | -2.6       | -8.2          | 0.48             |
| 3,474.0   | 0.16    | 37.03             | 3,473.9    | 7.8        | -2.6       | -8.2          | 0.26             |
| 3,499.1   | 0.10    | 55.64             | 3,499.1    | 7.8        | -2.6       | -8.2          | 0.29             |
| 3,524.1   | 0.13    | 54.26             | 3,524.1    | 7.9        | -2.5       | -8.3          | 0.12             |
| 3,549.5   | 0.10    | 15.72             | 3,549.5    | 7.9        | -2.5       | -8.3          | 0.32             |
| 3,574.7   | 0.03    | 19.62             | 3,574.6    | 7.9        | -2.5       | -8.3          | 0.28             |
| 3,598.9   | 0.07    | 153.35            | 3,598.9    | 7.9        | -2.5       | -8.3          | 0.38             |
| 3,624.1   | 0.06    | 356.24            | 3,624.0    | 7.9        | -2.5       | -8.3          | 0.51             |
| 3,649.7   | 0.03    | 267.51            | 3,649.6    | 7.9        | -2.5       | -8.3          | 0.26             |
| 3,674.9   | 0.06    | 34.99             | 3,674.9    | 8.0        | -2.5       | -8.3          | 0.32             |
| 3,699.0   | 0.04    | 95.48             | 3,699.0    | 8.0        | -2.5       | -8.3          | 0.22             |
| 3,724.2   | 0.03    | 30.83             | 3,724.2    | 8.0        | -2.4       | -8.3          | 0.15             |
| 3,749.4   | 0.04    | 48.97             | 3,749.4    | 8.0        | -2.4       | -8.3          | 0.06             |
| 3,774.6   | 0.10    | 32.03             | 3,774.6    | 8.0        | -2.4       | -8.4          | 0.25             |
| 3,799.7   | 0.09    | 14.70             | 3,799.6    | 8.0        | -2.4       | -8.4          | 0.12             |
| 3,825.0   | 0.05    | 12.19             | 3,824.9    | 8.1        | -2.4       | -8.4          | 0.16             |
| 3,849.1   | 0.17    | 352.54            | 3,849.1    | 8.1        | -2.4       | -8.5          | 0.51             |
| 3,874.7   | 0.07    | 30.24             | 3,874.7    | 8.2        | -2.4       | -8.5          | 0.48             |
| 3,898.5   | 0.13    | 327.59            | 3,898.4    | 8.2        | -2.4       | -8.5          | 0.49             |
| 3,923.6   | 0.14    | 350.08            | 3,923.5    | 8.3        | -2.4       | -8.6          | 0.21             |
| 3,949.2   | 0.14    | 11.76             | 3,949.1    | 8.3        | -2.4       | -8.7          | 0.21             |
| 3,974.0   | 0.08    | 346.30            | 3,973.9    | 8.4        | -2.4       | -8.7          | 0.31             |
| 3,999.5   | 0.18    | 2.56              | 3,999.5    | 8.4        | -2.4       | -8.8          | 0.41             |
| 4,024.5   | 0.11    | 40.62             | 4,024.5    | 8.5        | -2.4       | -8.8          | 0.46             |
| 4,049.8   | 0.14    | 17.54             | 4,049.7    | 8.5        | -2.4       | -8.8          | 0.23             |
| 4,073.9   | 0.15    | 24.16             | 4,073.8    | 8.6        | -2.4       | -8.9          | 0.08             |
| 4,098.9   | 0.22    | 0.19              | 4,098.9    | 8.7        | -2.3       | -9.0          | 0.41             |
| 4,124.7   | 0.15    | 17.85             | 4,124.7    | 8.7        | -2.3       | -9.0          | 0.35             |
| 4,148.9   | 0.23    | 348.49            | 4,148.8    | 8.8        | -2.3       | -9.1          | 0.51             |
| 4,174.5   | 0.36    | 346.97            | 4,174.4    | 8.9        | -2.4       | -9.2          | 0.51             |
| 4,199.6   | 0.27    | 343.99            | 4,199.5    | 9.1        | -2.4       | -9.4          | 0.36             |
| 4,224.2   | 0.24    | 333.39            | 4,224.2    | 9.2        | -2.4       | -9.5          | 0.23             |
| 4,248.8   | 0.31    | 331.06            | 4,248.7    | 9.3        | -2.5       | -9.6          | 0.29             |
| 4,274.8   | 0.23    | 344.99            | 4,274.7    | 9.4        | -2.5       | -9.7          | 0.40             |
| 4,298.5   | 0.19    | 332.35            | 4,298.4    | 9.5        | -2.6       | -9.8          | 0.26             |
| 4,324.5   | 0.14    | 336.18            | 4,324.4    | 9.5        | -2.6       | -9.9          | 0.20             |
| 4,349.1   | 0.14    | 341.40            | 4,349.0    | 9.6        | -2.6       | -10.0         | 0.05             |

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WV GEOLOGICAL SURVEY  
MORGANTOWN, WV

EOW Completion Report



**Company:** Antero Resources  
**Project:** Doddridge County WV  
**Site:** Josie/Swisher/Union Pad  
**Well:** Josie Unit 1H  
**Wellbore:** Original Wellpath  
**Design:** As Drilled

**Local Co-ordinate Reference:** Well Josie Unit 1H  
**TVD Reference:** Josie Unit 1H 976' GL = 24' RKB @ 1000.0usft  
**MD Reference:** Josie Unit 1H 976' GL = 24' RKB @ 1000.0usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Oklahoma District

Survey

| MD (usft) | Inc (°) | Azi (azimuth) (°) | TVD (usft) | N/S (usft) | E/W (usft) | V. Sec (usft) | DLeg (°/100usft) |
|-----------|---------|-------------------|------------|------------|------------|---------------|------------------|
| 4,374.6   | 0.17    | 29.84             | 4,374.5    | 9.7        | -2.6       | -10.0         | 0.51             |
| 4,399.6   | 0.14    | 344.91            | 4,399.6    | 9.7        | -2.6       | -10.1         | 0.49             |
| 4,424.3   | 0.24    | 324.52            | 4,424.2    | 9.8        | -2.6       | -10.1         | 0.48             |
| 4,449.3   | 0.18    | 357.38            | 4,449.3    | 9.9        | -2.7       | -10.2         | 0.53             |
| 4,473.9   | 0.12    | 350.21            | 4,473.9    | 9.9        | -2.7       | -10.3         | 0.25             |
| 4,499.9   | 0.14    | 341.46            | 4,499.9    | 10.0       | -2.7       | -10.4         | 0.11             |
| 4,524.3   | 0.05    | 323.86            | 4,524.2    | 10.0       | -2.7       | -10.4         | 0.38             |
| 4,548.1   | 0.18    | 304.54            | 4,548.1    | 10.1       | -2.7       | -10.4         | 0.56             |
| 4,574.1   | 0.19    | 337.13            | 4,574.0    | 10.1       | -2.8       | -10.5         | 0.40             |
| 4,598.5   | 0.21    | 322.48            | 4,598.5    | 10.2       | -2.8       | -10.6         | 0.22             |
| 4,624.6   | 0.27    | 324.81            | 4,624.6    | 10.3       | -2.9       | -10.7         | 0.23             |
| 4,649.5   | 0.22    | 327.88            | 4,649.4    | 10.4       | -3.0       | -10.8         | 0.21             |
| 4,674.7   | 0.17    | 328.76            | 4,674.7    | 10.5       | -3.0       | -10.9         | 0.20             |
| 4,698.7   | 0.16    | 343.63            | 4,698.7    | 10.5       | -3.0       | -10.9         | 0.18             |
| 4,724.3   | 0.29    | 307.99            | 4,724.2    | 10.6       | -3.1       | -11.0         | 0.72             |
| 4,749.8   | 0.09    | 301.68            | 4,749.7    | 10.6       | -3.2       | -11.1         | 0.79             |
| 4,774.3   | 0.12    | 336.71            | 4,774.2    | 10.7       | -3.2       | -11.1         | 0.28             |
| 4,799.8   | 0.18    | 331.04            | 4,799.8    | 10.7       | -3.2       | -11.2         | 0.24             |
| 4,824.3   | 0.18    | 325.83            | 4,824.3    | 10.8       | -3.3       | -11.3         | 0.07             |
| 4,850.0   | 0.08    | 351.72            | 4,849.9    | 10.9       | -3.3       | -11.3         | 0.44             |
| 4,874.1   | 0.16    | 342.31            | 4,874.1    | 10.9       | -3.3       | -11.4         | 0.34             |
| 4,898.6   | 0.14    | 348.26            | 4,898.6    | 11.0       | -3.3       | -11.5         | 0.10             |
| 4,924.2   | 0.29    | 355.72            | 4,924.1    | 11.1       | -3.3       | -11.5         | 0.60             |
| 4,949.3   | 0.23    | 356.83            | 4,949.2    | 11.2       | -3.3       | -11.7         | 0.24             |
| 4,974.0   | 0.27    | 353.32            | 4,973.9    | 11.3       | -3.3       | -11.8         | 0.17             |
| 5,000.0   | 0.26    | 354.47            | 4,999.9    | 11.4       | -3.4       | -11.9         | 0.04             |
| 5,025.0   | 0.36    | 342.73            | 5,024.9    | 11.5       | -3.4       | -12.0         | 0.47             |
| 5,048.6   | 0.27    | 338.66            | 5,048.6    | 11.7       | -3.4       | -12.1         | 0.39             |
| 5,074.0   | 0.24    | 26.09             | 5,074.0    | 11.8       | -3.4       | -12.2         | 0.82             |
| 5,099.5   | 0.32    | 11.44             | 5,099.5    | 11.9       | -3.4       | -12.3         | 0.42             |
| 5,112.0   | 0.30    | 4.12              | 5,111.9    | 11.9       | -3.4       | -12.4         | 0.36             |
| 5,125.0   | 0.19    | 351.63            | 5,124.9    | 12.0       | -3.4       | -12.5         | 0.94             |
| 5,225.0   | 3.94    | 182.09            | 5,224.9    | 8.7        | -3.5       | -9.4          | 4.13             |
| 5,325.0   | 5.19    | 195.95            | 5,324.6    | 0.9        | -4.9       | -2.3          | 1.66             |
| 5,425.0   | 5.23    | 194.84            | 5,424.1    | -7.8       | -7.3       | 5.3           | 0.11             |
| 5,525.0   | 5.41    | 180.12            | 5,523.7    | -16.9      | -8.5       | 13.7          | 1.37             |
| 5,625.0   | 5.49    | 183.13            | 5,623.3    | -26.4      | -8.8       | 22.7          | 0.30             |
| 5,725.0   | 5.59    | 192.24            | 5,722.8    | -36.0      | -10.0      | 31.4          | 0.88             |
| 5,825.0   | 5.61    | 194.17            | 5,822.3    | -45.5      | -12.3      | 39.9          | 0.19             |
| 5,925.0   | 6.20    | 195.13            | 5,921.8    | -55.4      | -14.9      | 48.6          | 0.60             |
| 6,025.0   | 6.90    | 194.69            | 6,021.1    | -66.4      | -17.8      | 58.3          | 0.70             |
| 6,125.0   | 5.26    | 194.68            | 6,120.6    | -76.7      | -20.5      | 67.3          | 1.64             |
| 6,225.0   | 4.74    | 184.93            | 6,220.2    | -85.2      | -22.0      | 75.1          | 0.99             |
| 6,325.0   | 5.14    | 182.50            | 6,319.8    | -93.8      | -22.6      | 83.1          | 0.45             |

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**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Oklahoma District

**Survey**

| MD (usft)        | Inc (°) | Azi (azimuth) (°) | TVD (usft) | N/S (usft) | E/W (usft) | V. Sec (usft) | DLeg (°/100usft) |
|------------------|---------|-------------------|------------|------------|------------|---------------|------------------|
| 6,425.0          | 5.47    | 183.23            | 6,419.4    | -103.1     | -23.0      | 91.8          | 0.34             |
| 6,467.1          | 5.75    | 182.06            | 6,461.3    | -107.2     | -23.2      | 95.7          | 0.72             |
| 6,512.0          | 6.05    | 180.76            | 6,505.9    | -111.8     | -23.3      | 100.1         | 0.73             |
| 6,547.0          | 5.72    | 179.89            | 6,540.8    | -115.4     | -23.4      | 103.5         | 0.98             |
| 6,578.0          | 5.63    | 184.73            | 6,571.6    | -118.4     | -23.5      | 106.4         | 1.57             |
| 6,607.0          | 7.78    | 176.57            | 6,600.4    | -121.8     | -23.5      | 109.6         | 8.09             |
| 6,641.0          | 12.44   | 173.02            | 6,633.9    | -127.7     | -22.9      | 115.4         | 13.82            |
| 6,672.0          | 16.07   | 173.69            | 6,663.9    | -135.3     | -22.0      | 123.0         | 11.72            |
| 6,701.0          | 18.83   | 173.18            | 6,691.6    | -144.0     | -21.0      | 131.5         | 9.53             |
| <b>Middlesex</b> |         |                   |            |            |            |               |                  |
| 6,735.0          | 21.87   | 173.56            | 6,723.5    | -155.7     | -19.7      | 143.1         | 8.95             |
| 6,767.0          | 25.07   | 171.62            | 6,752.8    | -168.3     | -18.0      | 155.7         | 10.29            |
| 6,795.0          | 28.82   | 167.96            | 6,777.8    | -180.8     | -15.7      | 168.3         | 14.64            |
| 6,829.0          | 33.78   | 166.71            | 6,806.8    | -198.0     | -11.8      | 185.9         | 14.71            |
| 6,857.0          | 38.16   | 165.75            | 6,829.5    | -214.0     | -7.9       | 202.3         | 15.78            |
| <b>Burkett</b>   |         |                   |            |            |            |               |                  |
| 6,861.0          | 38.79   | 165.63            | 6,832.6    | -216.4     | -7.3       | 204.8         | 15.78            |
| 6,889.0          | 43.17   | 165.53            | 6,853.7    | -234.2     | -2.7       | 223.1         | 15.64            |
| 6,898.0          | 44.16   | 165.39            | 6,860.2    | -240.2     | -1.2       | 229.3         | 11.05            |
| <b>Tully</b>     |         |                   |            |            |            |               |                  |
| 6,923.0          | 46.91   | 165.04            | 6,877.7    | -257.5     | 3.4        | 247.2         | 11.05            |
| 6,954.0          | 50.43   | 164.34            | 6,898.2    | -279.9     | 9.5        | 270.4         | 11.48            |
| 6,983.0          | 55.32   | 163.27            | 6,915.7    | -302.1     | 16.0       | 293.6         | 17.12            |
| 7,017.0          | 60.83   | 162.32            | 6,933.7    | -329.7     | 24.5       | 322.4         | 16.38            |
| 7,048.0          | 66.01   | 161.43            | 6,947.6    | -356.0     | 33.1       | 350.1         | 16.91            |
| 7,069.0          | 68.85   | 161.27            | 6,955.6    | -374.4     | 39.3       | 369.5         | 13.54            |
| <b>Marcellus</b> |         |                   |            |            |            |               |                  |
| 7,077.0          | 69.93   | 161.21            | 6,958.4    | -381.5     | 41.8       | 377.0         | 13.54            |
| 7,111.0          | 72.46   | 162.40            | 6,969.4    | -412.0     | 51.8       | 409.1         | 8.15             |
| 7,140.0          | 76.65   | 163.30            | 6,977.1    | -438.7     | 60.0       | 437.1         | 14.75            |
| 7,171.0          | 82.41   | 163.64            | 6,982.7    | -467.9     | 68.7       | 467.6         | 18.61            |
| 7,227.0          | 89.73   | 163.46            | 6,986.6    | -521.5     | 84.5       | 523.4         | 13.08            |
| 7,321.0          | 89.80   | 164.32            | 6,987.0    | -611.8     | 110.6      | 617.4         | 0.92             |
| 7,415.0          | 89.80   | 165.12            | 6,987.3    | -702.5     | 135.4      | 711.3         | 0.85             |
| 7,509.0          | 89.66   | 164.33            | 6,987.7    | -793.1     | 160.1      | 805.3         | 0.85             |
| 7,604.0          | 89.16   | 163.39            | 6,988.7    | -884.4     | 186.5      | 900.3         | 1.12             |
| 7,697.0          | 90.74   | 163.37            | 6,988.8    | -973.5     | 213.1      | 993.3         | 1.70             |
| 7,792.0          | 90.64   | 162.76            | 6,987.6    | -1,064.4   | 240.8      | 1,088.3       | 0.65             |
| 7,886.0          | 90.00   | 163.02            | 6,987.1    | -1,154.2   | 268.5      | 1,182.3       | 0.73             |
| 7,980.0          | 90.67   | 163.60            | 6,986.6    | -1,244.3   | 295.5      | 1,276.2       | 0.94             |
| 8,071.0          | 88.66   | 162.01            | 6,987.1    | -1,331.2   | 322.4      | 1,367.2       | 2.82             |
| 8,162.0          | 89.43   | 160.65            | 6,988.6    | -1,417.4   | 351.5      | 1,458.2       | 1.72             |
| 8,254.0          | 90.47   | 162.32            | 6,988.7    | -1,504.6   | 380.7      | 1,550.2       | 2.14             |
| 8,346.0          | 90.07   | 161.61            | 6,988.3    | -1,592.1   | 409.2      | 1,642.1       | 0.89             |
| 8,437.0          | 90.50   | 162.47            | 6,987.8    | -1,678.7   | 437.2      | 1,733.1       | 1.06             |

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**Well:** Josie Unit 1H  
**Wellbore:** Original Wellpath  
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**TVD Reference:** Josie Unit 1H 976' GL = 24' RKB @ 1000.0usft  
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**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Oklahoma District

Survey

| MD (usft) | Inc (°) | Azi (azimuth) (°) | TVD (usft) | N/S (usft) | E/W (usft) | V. Sec (usft) | DLeg (°/100usft) |
|-----------|---------|-------------------|------------|------------|------------|---------------|------------------|
| 8,528.0   | 89.56   | 162.47            | 6,987.8    | -1,765.4   | 464.7      | 1,824.1       | 1.03             |
| 8,620.0   | 89.97   | 162.65            | 6,988.1    | -1,853.2   | 492.2      | 1,916.1       | 0.49             |
| 8,710.0   | 90.37   | 162.81            | 6,987.9    | -1,939.1   | 518.9      | 2,006.1       | 0.48             |
| 8,801.0   | 90.30   | 161.95            | 6,987.3    | -2,025.9   | 546.5      | 2,097.1       | 0.95             |
| 8,892.0   | 89.80   | 163.27            | 6,987.3    | -2,112.7   | 573.7      | 2,188.1       | 1.55             |
| 8,985.0   | 90.00   | 163.46            | 6,987.4    | -2,201.8   | 600.3      | 2,281.1       | 0.30             |
| 9,077.0   | 90.40   | 164.26            | 6,987.1    | -2,290.2   | 625.9      | 2,373.1       | 0.97             |
| 9,171.0   | 90.87   | 163.82            | 6,986.1    | -2,380.6   | 651.7      | 2,467.1       | 0.68             |
| 9,265.0   | 89.19   | 164.63            | 6,986.0    | -2,471.0   | 677.3      | 2,561.0       | 1.98             |
| 9,359.0   | 89.60   | 164.44            | 6,987.0    | -2,561.6   | 702.3      | 2,655.0       | 0.48             |
| 9,454.0   | 89.87   | 163.53            | 6,987.4    | -2,652.9   | 728.6      | 2,750.0       | 1.00             |
| 9,548.0   | 88.79   | 161.54            | 6,988.5    | -2,742.6   | 756.8      | 2,844.0       | 2.41             |
| 9,642.0   | 89.13   | 161.22            | 6,990.3    | -2,831.6   | 786.8      | 2,937.9       | 0.50             |
| 9,736.0   | 89.66   | 161.54            | 6,991.2    | -2,920.7   | 816.8      | 3,031.9       | 0.66             |
| 9,830.0   | 90.04   | 160.65            | 6,991.5    | -3,009.6   | 847.2      | 3,125.8       | 1.03             |
| 9,925.0   | 88.52   | 161.54            | 6,992.7    | -3,099.5   | 878.0      | 3,220.8       | 1.85             |
| 10,019.0  | 88.89   | 162.99            | 6,994.8    | -3,189.0   | 906.6      | 3,314.7       | 1.59             |
| 10,113.0  | 89.36   | 164.22            | 6,996.2    | -3,279.2   | 933.2      | 3,408.7       | 1.40             |
| 10,207.0  | 89.93   | 164.24            | 6,996.8    | -3,369.6   | 958.7      | 3,502.7       | 0.61             |
| 10,301.0  | 89.93   | 163.76            | 6,996.9    | -3,460.0   | 984.6      | 3,596.7       | 0.51             |
| 10,395.0  | 89.97   | 164.75            | 6,997.0    | -3,550.5   | 1,010.1    | 3,690.6       | 1.05             |
| 10,489.0  | 89.00   | 165.61            | 6,997.9    | -3,641.3   | 1,034.2    | 3,784.6       | 1.38             |
| 10,583.0  | 89.23   | 165.58            | 6,999.3    | -3,732.4   | 1,057.6    | 3,878.5       | 0.25             |
| 10,677.0  | 89.53   | 163.48            | 7,000.3    | -3,823.0   | 1,082.6    | 3,972.4       | 2.26             |
| 10,771.0  | 89.56   | 162.75            | 7,001.1    | -3,912.9   | 1,109.9    | 4,066.4       | 0.78             |
| 10,865.0  | 90.20   | 161.57            | 7,001.3    | -4,002.4   | 1,138.7    | 4,160.4       | 1.43             |
| 10,959.0  | 89.30   | 161.79            | 7,001.7    | -4,091.6   | 1,168.3    | 4,254.4       | 0.99             |
| 11,054.0  | 90.23   | 163.15            | 7,002.1    | -4,182.2   | 1,196.9    | 4,349.4       | 1.73             |
| 11,148.0  | 88.53   | 162.63            | 7,003.1    | -4,272.0   | 1,224.5    | 4,443.3       | 1.89             |
| 11,242.0  | 88.25   | 160.53            | 7,005.7    | -4,361.2   | 1,254.2    | 4,537.3       | 2.25             |
| 11,336.0  | 88.69   | 161.93            | 7,008.3    | -4,450.1   | 1,284.5    | 4,631.2       | 1.56             |
| 11,430.0  | 90.57   | 162.66            | 7,008.9    | -4,539.7   | 1,313.0    | 4,725.2       | 2.15             |
| 11,524.0  | 89.23   | 162.33            | 7,009.0    | -4,629.3   | 1,341.3    | 4,819.2       | 1.47             |
| 11,618.0  | 89.23   | 163.12            | 7,010.3    | -4,719.1   | 1,369.2    | 4,913.2       | 0.84             |
| 11,712.0  | 90.23   | 164.14            | 7,010.7    | -4,809.3   | 1,395.7    | 5,007.2       | 1.52             |
| 11,806.0  | 91.34   | 165.04            | 7,009.4    | -4,899.9   | 1,420.7    | 5,101.1       | 1.52             |
| 11,900.0  | 90.23   | 163.22            | 7,008.2    | -4,990.3   | 1,446.4    | 5,195.1       | 2.27             |
| 11,994.0  | 88.59   | 160.50            | 7,009.1    | -5,079.6   | 1,475.7    | 5,289.0       | 3.38             |
| 12,088.0  | 91.14   | 161.71            | 7,009.3    | -5,168.5   | 1,506.1    | 5,383.0       | 3.00             |
| 12,182.0  | 91.17   | 162.01            | 7,007.4    | -5,257.8   | 1,535.4    | 5,476.9       | 0.32             |
| 12,276.0  | 89.83   | 161.88            | 7,006.6    | -5,347.2   | 1,564.5    | 5,570.9       | 1.43             |
| 12,371.0  | 90.44   | 162.88            | 7,006.4    | -5,437.7   | 1,593.2    | 5,665.9       | 1.23             |
| 12,465.0  | 89.09   | 160.71            | 7,006.8    | -5,527.0   | 1,622.6    | 5,759.9       | 2.72             |
| 12,559.0  | 90.54   | 162.54            | 7,007.1    | -5,616.2   | 1,652.2    | 5,853.9       | 2.48             |





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|-----------|---------|-------------------|------------|------------|-----------|---------------|------------------|
| 12,653.0  | 90.54   | 162.53            | 7,006.2    | -5,705.9   | 1,680.4   | 5,947.8       | 0.01             |
| 12,747.0  | 91.45   | 164.69            | 7,004.6    | -5,796.0   | 1,707.0   | 6,041.8       | 2.49             |
| 12,841.0  | 91.67   | 164.06            | 7,002.0    | -5,886.5   | 1,732.3   | 6,135.8       | 0.71             |
| 12,935.0  | 90.50   | 164.98            | 7,000.2    | -5,977.1   | 1,757.4   | 6,229.7       | 1.58             |
| 13,029.0  | 90.94   | 164.47            | 6,999.1    | -6,067.8   | 1,782.1   | 6,323.7       | 0.72             |
| 13,122.0  | 90.60   | 163.23            | 6,997.8    | -6,157.1   | 1,808.0   | 6,416.6       | 1.38             |
| 13,216.0  | 90.37   | 163.33            | 6,997.0    | -6,247.1   | 1,835.0   | 6,510.6       | 0.27             |
| 13,311.0  | 88.76   | 163.84            | 6,997.7    | -6,338.2   | 1,861.9   | 6,605.6       | 1.78             |
| 13,405.0  | 89.26   | 164.24            | 6,999.4    | -6,428.6   | 1,887.7   | 6,699.6       | 0.68             |
| 13,498.0  | 89.78   | 163.02            | 7,000.1    | -6,517.8   | 1,913.9   | 6,792.6       | 1.43             |
| 13,592.0  | 90.37   | 162.64            | 7,000.0    | -6,607.6   | 1,941.7   | 6,886.6       | 0.75             |
| 13,687.0  | 89.40   | 163.45            | 7,000.2    | -6,698.5   | 1,969.4   | 6,981.6       | 1.33             |
| 13,781.0  | 89.97   | 163.35            | 7,000.7    | -6,788.6   | 1,996.2   | 7,075.6       | 0.62             |
| 13,875.0  | 90.50   | 163.32            | 7,000.3    | -6,878.6   | 2,023.2   | 7,169.6       | 0.56             |
| 13,969.0  | 89.30   | 163.77            | 7,000.5    | -6,968.8   | 2,049.8   | 7,263.6       | 1.36             |
| 14,063.0  | 89.23   | 164.16            | 7,001.7    | -7,059.1   | 2,075.8   | 7,357.5       | 0.42             |
| 14,158.0  | 89.60   | 164.69            | 7,002.7    | -7,150.6   | 2,101.3   | 7,452.5       | 0.68             |
| 14,252.0  | 89.16   | 163.66            | 7,003.7    | -7,241.0   | 2,126.9   | 7,546.5       | 1.19             |
| 14,346.0  | 88.99   | 163.52            | 7,005.2    | -7,331.2   | 2,153.5   | 7,640.5       | 0.23             |
| 14,440.0  | 89.73   | 162.34            | 7,006.3    | -7,421.1   | 2,181.1   | 7,734.4       | 1.48             |
| 14,534.0  | 90.10   | 162.30            | 7,006.4    | -7,510.6   | 2,209.6   | 7,828.4       | 0.40             |
| 14,636.0  | 91.10   | 162.87            | 7,005.3    | -7,607.9   | 2,240.1   | 7,930.4       | 1.13             |
| 14,686.0  | 90.00   | 162.00            | 7,004.8    | -7,655.6   | 2,255.2   | 7,980.4       | 2.80             |

**Design Annotations**

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |              | Comment   |
|-----------------------|-----------------------|-------------------|--------------|-----------|
|                       |                       | +N/-S (usft)      | +E/-W (usft) |           |
| 6,701.0               | 6,691.6               | -144.0            | -21.0        | Middlesex |
| 6,857.0               | 6,829.5               | -214.0            | -7.9         | Burkett   |
| 6,898.0               | 6,860.2               | -240.2            | -1.2         | Tully     |
| 7,069.0               | 6,955.6               | -374.4            | 39.3         | Marcellus |

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_