

**NM OIL CONSERVATION  
ARTESIA DISTRICT**

**FEB 05 2019**

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**Devon Energy**

**Eddy County, NM (NAD-83)**

**Turquoise**

**Turquoise PWU 27 9H**

*30-015-44983*

**OH**

**Design: OH**

**Standard Survey Report**

**03 October, 2018**

# LEAM Drilling Services

## Survey Report

|                  |                          |                                     |                                    |
|------------------|--------------------------|-------------------------------------|------------------------------------|
| <b>Company:</b>  | Devon Energy             | <b>Local Co-ordinate Reference:</b> | Well Turquoise PWU 27 9H           |
| <b>Project:</b>  | Eddy County, NM (NAD-83) | <b>TVD Reference:</b>               | 3344.70' GE + 26' KB @ 3370.70usft |
| <b>Site:</b>     | Turquoise                | <b>MD Reference:</b>                | 3344.70' GE + 26' KB @ 3370.70usft |
| <b>Well:</b>     | Turquoise PWU 27 9H      | <b>North Reference:</b>             | Grid                               |
| <b>Wellbore:</b> | OH                       | <b>Survey Calculation Method:</b>   | Minimum Curvature                  |
| <b>Design:</b>   | OH                       | <b>Database:</b>                    | EDM 5000.1 Multi User Db           |

|                    |                           |                      |                |
|--------------------|---------------------------|----------------------|----------------|
| <b>Project</b>     | Eddy County, NM (NAD-83)  |                      |                |
| <b>Map System:</b> | US State Plane 1983       | <b>System Datum:</b> | Mean Sea Level |
| <b>Geo Datum:</b>  | North American Datum 1983 |                      |                |
| <b>Map Zone:</b>   | New Mexico Eastern Zone   |                      |                |

|                              |           |                     |                 |                          |                   |
|------------------------------|-----------|---------------------|-----------------|--------------------------|-------------------|
| <b>Site</b>                  | Turquoise |                     |                 |                          |                   |
| <b>Site Position:</b>        |           | <b>Northing:</b>    | 593,931.03 usft | <b>Latitude:</b>         | 32° 37' 56.9788 N |
| <b>From:</b>                 | Lat/Long  | <b>Easting:</b>     | 621,732.64 usft | <b>Longitude:</b>        | 104° 4' 19.8333 W |
| <b>Position Uncertainty:</b> | 0.00 usft | <b>Slot Radius:</b> | 13-3/16 "       | <b>Grid Convergence:</b> | 0.14 °            |

|                             |                     |                            |                 |                      |                   |
|-----------------------------|---------------------|----------------------------|-----------------|----------------------|-------------------|
| <b>Well</b>                 | Turquoise PWU 27 9H |                            |                 |                      |                   |
| <b>Well Position</b>        | +N-S 0.00 usft      | <b>Northing:</b>           | 595,319.97 usft | <b>Latitude:</b>     | 32° 38' 10.7221 N |
|                             | +E-W 0.00 usft      | <b>Easting:</b>            | 621,766.42 usft | <b>Longitude:</b>    | 104° 4' 19.3983 W |
| <b>Position Uncertainty</b> | 0.00 usft           | <b>Wellhead Elevation:</b> | 0.00 usft       | <b>Ground Level:</b> | 3,344.70 usft     |

|                  |                   |                    |                        |                      |                            |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| <b>Wellbore</b>  | OH                |                    |                        |                      |                            |
| <b>Magnetics</b> | <b>Model Name</b> | <b>Sample Date</b> | <b>Declination (°)</b> | <b>Dip Angle (°)</b> | <b>Field Strength (nT)</b> |
|                  | HDGM              | 8/22/2018          | 7.37                   | 60.45                | 48,074                     |

|                          |                                |                    |                    |                      |      |
|--------------------------|--------------------------------|--------------------|--------------------|----------------------|------|
| <b>Design</b>            | OH                             |                    |                    |                      |      |
| <b>Audit Notes:</b>      |                                |                    |                    |                      |      |
| <b>Version:</b>          | 1.0                            | <b>Phase:</b>      | ACTUAL             | <b>Tie On Depth:</b> | 0.00 |
| <b>Vertical Section:</b> | <b>Depth From (TVD) (usft)</b> | <b>+N-S (usft)</b> | <b>+E-W (usft)</b> | <b>Direction (°)</b> |      |
|                          | 0.00                           | 0.00               | 0.00               | 89.90                |      |

|                       |                  |                          |                  |                    |
|-----------------------|------------------|--------------------------|------------------|--------------------|
| <b>Survey Program</b> | <b>Date</b>      | 10/3/2018                |                  |                    |
| <b>From (usft)</b>    | <b>To (usft)</b> | <b>Survey (Wellbore)</b> | <b>Tool Name</b> | <b>Description</b> |
| 67.75                 | 307.00           | Survey #1 (OH)           | VES GyroFlex V2  |                    |
| 424.00                | 14,080.00        | Survey #2 (OH)           | LEAM MWD+HDGM    | MWD+HDGM           |
| 14,155.00             | 14,155.00        | Survey #3 (OH)           | Project          | Projection         |

|                                                                      |                        |                    |                              |                    |                    |                                |                                |                               |                              |
|----------------------------------------------------------------------|------------------------|--------------------|------------------------------|--------------------|--------------------|--------------------------------|--------------------------------|-------------------------------|------------------------------|
| <b>Survey</b>                                                        |                        |                    |                              |                    |                    |                                |                                |                               |                              |
| <b>Measured Depth (usft)</b>                                         | <b>Inclination (°)</b> | <b>Azimuth (°)</b> | <b>Vertical Depth (usft)</b> | <b>+N-S (usft)</b> | <b>+E-W (usft)</b> | <b>Vertical Section (usft)</b> | <b>Dogleg Rate (°/100usft)</b> | <b>Build Rate (°/100usft)</b> | <b>Turn Rate (°/100usft)</b> |
| 0.00                                                                 | 0.00                   | 0.00               | 0.00                         | 0.00               | 0.00               | 0.00                           | 0.00                           | 0.00                          | 0.00                         |
| SHL (Turquoise 9H) 992' FNL, 243' FEL of Sec 28 - SHL (Turquoise 9H) |                        |                    |                              |                    |                    |                                |                                |                               |                              |
| 67.75                                                                | 0.33                   | 127.48             | 67.75                        | -0.12              | 0.15               | 0.15                           | 0.49                           | 0.49                          | 0.00                         |
| 147.50                                                               | 0.51                   | 115.02             | 147.50                       | -0.41              | 0.66               | 0.66                           | 0.25                           | 0.23                          | -15.62                       |
| 227.25                                                               | 0.81                   | 102.79             | 227.24                       | -0.68              | 1.53               | 1.53                           | 0.41                           | 0.38                          | -15.34                       |
| 307.00                                                               | 0.92                   | 93.78              | 306.98                       | -0.85              | 2.72               | 2.72                           | 0.22                           | 0.14                          | -11.30                       |
| 424.00                                                               | 0.88                   | 72.27              | 423.97                       | -0.64              | 4.51               | 4.51                           | 0.29                           | -0.03                         | -18.38                       |
| 516.00                                                               | 0.88                   | 74.91              | 515.96                       | -0.24              | 5.87               | 5.87                           | 0.04                           | 0.00                          | 2.87                         |
| 609.00                                                               | 1.32                   | 67.52              | 608.94                       | 0.36               | 7.55               | 7.55                           | 0.50                           | 0.47                          | -7.95                        |

# LEAM Drilling Services

## Survey Report

|                  |                          |                                     |                                    |
|------------------|--------------------------|-------------------------------------|------------------------------------|
| <b>Company:</b>  | Devon Energy             | <b>Local Co-ordinate Reference:</b> | Well Turquoise PWU 27 9H           |
| <b>Project:</b>  | Eddy County, NM (NAD-83) | <b>TVD Reference:</b>               | 3344.70' GE + 26' KB @ 3370.70usft |
| <b>Site:</b>     | Turquoise                | <b>MD Reference:</b>                | 3344.70' GE + 26' KB @ 3370.70usft |
| <b>Well:</b>     | Turquoise PWU 27 9H      | <b>North Reference:</b>             | Grid                               |
| <b>Wellbore:</b> | OH                       | <b>Survey Calculation Method:</b>   | Minimum Curvature                  |
| <b>Design:</b>   | OH                       | <b>Database:</b>                    | EDM 5000.1 Multi User Db           |

### 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) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 701.00                | 1.49            | 81.41       | 700.91                | 0.94         | 9.71         | 9.71                    | 0.41                    | 0.18                   | 15.10                 |
| 794.00                | 1.41            | 72.97       | 793.88                | 1.46         | 12.00        | 12.00                   | 0.24                    | -0.09                  | -9.08                 |
| 886.00                | 1.41            | 94.59       | 885.86                | 1.70         | 14.21        | 14.21                   | 0.57                    | 0.00                   | 23.50                 |
| 978.00                | 1.41            | 78.12       | 977.83                | 1.82         | 16.45        | 16.45                   | 0.41                    | 0.00                   | -16.82                |
| 1,071.00              | 1.23            | 109.36      | 1,070.81              | 1.70         | 18.51        | 18.52                   | 0.76                    | -0.19                  | 32.52                 |
| 1,163.00              | 1.49            | 84.75       | 1,162.78              | 1.49         | 20.64        | 20.64                   | 0.69                    | 0.28                   | -26.75                |
| 1,256.00              | 1.32            | 84.40       | 1,255.75              | 1.70         | 22.91        | 22.91                   | 0.18                    | -0.18                  | -0.38                 |
| 1,348.00              | 1.06            | 33.77       | 1,347.73              | 2.51         | 24.43        | 24.44                   | 1.14                    | -0.28                  | -55.03                |
| 1,441.00              | 0.88            | 35.18       | 1,440.72              | 3.81         | 25.32        | 25.33                   | 0.20                    | -0.19                  | 1.52                  |
| 1,533.00              | 0.62            | 353.69      | 1,532.71              | 4.88         | 25.68        | 25.68                   | 0.64                    | -0.28                  | -45.10                |
| 1,626.00              | 0.53            | 44.14       | 1,625.71              | 5.69         | 25.92        | 25.93                   | 0.53                    | -0.10                  | 54.25                 |
| 1,721.00              | 0.62            | 35.35       | 1,720.71              | 6.43         | 26.52        | 26.53                   | 0.13                    | 0.09                   | -9.25                 |
| 1,815.00              | 0.79            | 20.94       | 1,814.70              | 7.45         | 27.05        | 27.06                   | 0.26                    | 0.18                   | -15.33                |
| 1,910.00              | 0.88            | 1.08        | 1,909.69              | 8.79         | 27.30        | 27.31                   | 0.32                    | 0.09                   | -20.91                |
| 2,004.00              | 0.79            | 341.57      | 2,003.68              | 10.12        | 27.11        | 27.12                   | 0.32                    | -0.10                  | -20.76                |
| 2,098.00              | 0.62            | 24.11       | 2,097.67              | 11.20        | 27.11        | 27.13                   | 0.57                    | -0.18                  | 45.26                 |
| 2,193.00              | 0.79            | 349.30      | 2,192.66              | 12.32        | 27.20        | 27.22                   | 0.48                    | 0.18                   | -36.64                |
| 2,287.00              | 0.79            | 348.84      | 2,286.66              | 13.58        | 26.93        | 26.95                   | 0.04                    | 0.00                   | -2.62                 |
| 2,382.00              | 0.26            | 352.28      | 2,381.65              | 14.44        | 26.75        | 26.78                   | 0.56                    | -0.56                  | 5.74                  |
| 2,476.00              | 0.53            | 328.10      | 2,475.65              | 15.01        | 26.48        | 26.51                   | 0.34                    | 0.29                   | -27.86                |
| 2,570.00              | 1.14            | 355.80      | 2,569.64              | 16.30        | 26.17        | 26.20                   | 0.78                    | 0.65                   | 31.60                 |
| 2,664.00              | 2.37            | 14.09       | 2,663.59              | 19.12        | 26.57        | 26.61                   | 1.42                    | 1.31                   | 19.46                 |
| 2,758.00              | 2.46            | 3.36        | 2,757.51              | 23.02        | 27.17        | 27.21                   | 0.49                    | 0.10                   | -11.41                |
| 2,853.00              | 3.34            | 11.98       | 2,852.39              | 27.76        | 27.88        | 27.91                   | 1.03                    | 0.93                   | 9.07                  |
| 2,947.00              | 3.25            | 6.70        | 2,946.23              | 33.09        | 28.74        | 28.80                   | 0.34                    | -0.10                  | -5.62                 |
| 3,042.00              | 3.96            | 12.68       | 3,041.05              | 38.96        | 29.77        | 29.84                   | 0.84                    | 0.75                   | 6.29                  |
| 3,135.00              | 4.04            | 13.73       | 3,133.82              | 45.28        | 31.26        | 31.33                   | 0.12                    | 0.09                   | 1.13                  |
| 3,230.00              | 5.01            | 13.38       | 3,228.52              | 52.56        | 33.01        | 33.10                   | 1.02                    | 1.02                   | -0.37                 |
| 3,325.00              | 5.01            | 9.16        | 3,323.16              | 60.69        | 34.63        | 34.74                   | 0.39                    | 0.00                   | -4.44                 |
| 3,360.00              | 5.28            | 12.15       | 3,358.02              | 63.78        | 35.21        | 35.32                   | 1.09                    | 0.77                   | 8.54                  |
| 3,505.00              | 5.10            | 9.48        | 3,502.42              | 76.66        | 37.68        | 37.81                   | 0.21                    | -0.12                  | -1.84                 |
| 3,599.00              | 5.01            | 7.54        | 3,596.06              | 84.85        | 38.90        | 39.05                   | 0.21                    | -0.10                  | -2.06                 |
| 3,694.00              | 4.84            | 4.90        | 3,690.71              | 92.95        | 39.79        | 39.95                   | 0.30                    | -0.18                  | -2.78                 |
| 3,788.00              | 4.75            | 2.62        | 3,784.38              | 100.79       | 40.31        | 40.48                   | 0.22                    | -0.10                  | -2.43                 |
| 3,882.00              | 4.66            | 0.16        | 3,878.06              | 108.50       | 40.50        | 40.69                   | 0.24                    | -0.10                  | -2.62                 |
| 3,976.00              | 4.48            | 355.06      | 3,971.76              | 115.97       | 40.19        | 40.39                   | 0.47                    | -0.19                  | -5.43                 |
| 4,071.00              | 4.75            | 357.87      | 4,066.46              | 123.60       | 39.72        | 39.94                   | 0.37                    | 0.28                   | 2.96                  |
| 4,165.00              | 4.84            | 15.28       | 4,160.13              | 131.31       | 40.63        | 40.85                   | 1.55                    | 0.10                   | 18.52                 |
| 4,259.00              | 4.92            | 28.28       | 4,253.79              | 138.69       | 43.58        | 43.82                   | 1.18                    | 0.09                   | 13.83                 |
| 4,354.00              | 5.10            | 25.65       | 4,348.43              | 146.08       | 47.34        | 47.59                   | 0.31                    | 0.19                   | -2.77                 |
| 4,448.00              | 5.54            | 26.70       | 4,442.03              | 153.90       | 51.19        | 51.45                   | 0.48                    | 0.47                   | 1.12                  |
| 4,542.00              | 5.01            | 34.61       | 4,535.63              | 161.34       | 55.56        | 55.84                   | 0.96                    | -0.56                  | 8.41                  |
| 4,636.00              | 5.28            | 38.30       | 4,629.25              | 168.11       | 60.57        | 60.86                   | 0.45                    | 0.29                   | 3.93                  |

# LEAM Drilling Services

## Survey Report

|                  |                          |                                     |                                    |
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| <b>Well:</b>     | Turquoise PWU 27 9H      | <b>North Reference:</b>             | Grid                               |
| <b>Wellbore:</b> | OH                       | <b>Survey Calculation Method:</b>   | Minimum Curvature                  |
| <b>Design:</b>   | OH                       | <b>Database:</b>                    | EDM 5000.1 Multi User Db           |

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| 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) |
|------------------------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 4,730.00                                       | 4.40            | 34.61       | 4,722.91              | 174.47       | 65.30        | 65.60                   | 0.99                    | -0.94                  | -3.93                 |
| 4,825.00                                       | 4.57            | 33.91       | 4,817.62              | 180.61       | 69.48        | 69.79                   | 0.19                    | 0.18                   | -0.74                 |
| 4,919.00                                       | 5.01            | 34.79       | 4,911.29              | 187.09       | 73.91        | 74.24                   | 0.47                    | 0.47                   | 0.94                  |
| 5,014.00                                       | 3.69            | 20.73       | 5,006.02              | 193.36       | 77.36        | 77.70                   | 1.78                    | -1.39                  | -14.80                |
| 5,108.00                                       | 3.34            | 12.64       | 5,099.85              | 198.86       | 79.03        | 79.37                   | 0.64                    | -0.37                  | -8.61                 |
| 5,202.00                                       | 4.48            | 10.71       | 5,193.62              | 205.14       | 80.31        | 80.67                   | 1.22                    | 1.21                   | -2.05                 |
| 5,297.00                                       | 4.84            | 8.24        | 5,288.31              | 212.75       | 81.57        | 81.94                   | 0.43                    | 0.38                   | -2.80                 |
| 5,391.00                                       | 4.75            | 9.48        | 5,381.98              | 220.51       | 82.78        | 83.17                   | 0.15                    | -0.10                  | 1.32                  |
| 5,485.00                                       | 4.75            | 7.72        | 5,475.66              | 228.21       | 83.95        | 84.34                   | 0.16                    | 0.00                   | -1.87                 |
| 5,579.00                                       | 4.84            | 25.12       | 5,569.34              | 235.65       | 86.15        | 86.58                   | 1.54                    | 0.10                   | 18.51                 |
| 5,674.00                                       | 4.92            | 29.87       | 5,663.99              | 242.82       | 89.88        | 90.31                   | 0.43                    | 0.08                   | 5.00                  |
| 5,768.00                                       | 4.40            | 31.45       | 5,757.68              | 249.39       | 93.77        | 94.21                   | 0.57                    | -0.55                  | 1.68                  |
| 5,862.00                                       | 4.48            | 30.39       | 5,851.40              | 255.63       | 97.51        | 97.98                   | 0.12                    | 0.09                   | -1.13                 |
| 5,956.00                                       | 4.40            | 24.42       | 5,945.12              | 262.08       | 100.86       | 101.32                  | 0.50                    | -0.09                  | -8.35                 |
| 6,050.00                                       | 4.40            | 19.49       | 6,038.84              | 268.76       | 103.55       | 104.02                  | 0.40                    | 0.00                   | -5.24                 |
| 6,144.00                                       | 4.04            | 16.15       | 6,132.58              | 275.34       | 105.88       | 106.18                  | 0.46                    | -0.38                  | -3.55                 |
| 6,238.00                                       | 3.96            | 14.57       | 6,226.36              | 281.66       | 107.41       | 107.91                  | 0.14                    | -0.09                  | -1.68                 |
| 6,332.00                                       | 4.92            | 22.89       | 6,320.07              | 288.52       | 109.80       | 110.31                  | 1.23                    | 1.02                   | 8.96                  |
| 6,426.00                                       | 4.92            | 22.29       | 6,413.73              | 295.96       | 112.91       | 113.42                  | 0.06                    | 0.00                   | -0.74                 |
| 6,520.00                                       | 4.75            | 22.11       | 6,507.39              | 303.29       | 115.90       | 116.43                  | 0.18                    | -0.18                  | -0.19                 |
| 6,615.00                                       | 3.96            | 22.81       | 6,602.12              | 309.96       | 118.65       | 119.19                  | 0.83                    | -0.83                  | 0.74                  |
| 6,709.00                                       | 3.17            | 18.60       | 6,695.94              | 315.42       | 120.74       | 121.29                  | 0.88                    | -0.84                  | -4.48                 |
| 6,803.00                                       | 3.87            | 20.18       | 6,789.76              | 320.86       | 122.66       | 123.22                  | 0.75                    | 0.74                   | 1.68                  |
| 6,897.00                                       | 3.43            | 11.92       | 6,883.57              | 326.59       | 124.34       | 124.91                  | 0.73                    | -0.47                  | -8.79                 |
| 6,991.00                                       | 4.04            | 24.92       | 6,977.37              | 332.34       | 126.32       | 126.90                  | 1.11                    | 0.65                   | 13.83                 |
| 7,085.00                                       | 4.13            | 27.03       | 7,071.13              | 338.38       | 129.25       | 129.84                  | 0.19                    | 0.10                   | 2.24                  |
| 7,180.00                                       | 3.96            | 28.26       | 7,165.89              | 344.30       | 132.36       | 132.96                  | 0.20                    | -0.18                  | 1.29                  |
| 7,272.00                                       | 3.78            | 36.17       | 7,257.68              | 349.54       | 135.65       | 136.26                  | 0.61                    | -0.20                  | 8.80                  |
| 7,366.00                                       | 3.34            | 32.48       | 7,351.50              | 354.35       | 138.95       | 139.57                  | 0.53                    | -0.47                  | -3.93                 |
| 7,459.00                                       | 3.69            | 25.80       | 7,444.33              | 359.33       | 141.71       | 142.33                  | 0.58                    | 0.38                   | -7.18                 |
| 7,554.00                                       | 4.13            | 18.24       | 7,539.11              | 365.33       | 144.11       | 144.75                  | 0.71                    | 0.46                   | -7.96                 |
| 7,648.00                                       | 3.25            | 4.18        | 7,632.91              | 371.21       | 145.36       | 146.01                  | 1.34                    | -0.94                  | -14.96                |
| 7,742.00                                       | 3.08            | 335.00      | 7,726.78              | 376.15       | 144.49       | 145.15                  | 1.70                    | -0.18                  | -31.04                |
| 7,836.00                                       | 2.37            | 17.89       | 7,820.68              | 380.29       | 144.02       | 144.68                  | 2.23                    | -0.76                  | 45.63                 |
| 7,930.00                                       | 3.78            | 39.16       | 7,914.54              | 384.64       | 148.57       | 147.24                  | 1.91                    | 1.50                   | 22.63                 |
| 8,024.00                                       | 2.99            | 49.88       | 8,008.38              | 388.53       | 150.40       | 151.08                  | 1.07                    | -0.84                  | 11.40                 |
| 8,118.00                                       | 1.76            | 60.43       | 8,102.30              | 390.82       | 153.54       | 154.22                  | 1.38                    | -1.31                  | 11.22                 |
| 8,213.00                                       | 2.29            | 71.86       | 8,197.24              | 392.13       | 156.81       | 157.29                  | 0.70                    | 0.56                   | 12.03                 |
| 8,334.00                                       | 1.93            | 65.00       | 8,318.16              | 393.74       | 160.75       | 161.44                  | 0.36                    | -0.30                  | -5.67                 |
| 8,406.00                                       | 3.34            | 48.13       | 8,390.08              | 395.66       | 163.41       | 164.10                  | 2.21                    | 1.96                   | -23.43                |
| KOP (Turquoise 9H) 695' FNL, 83' FEL of Sec 28 |                 |             |                       |              |              |                         |                         |                        |                       |
| 8,501.00                                       | 15.04           | 24.22       | 8,483.72              | 408.79       | 170.56       | 171.27                  | 12.70                   | 12.32                  | -25.17                |
| 8,549.00                                       | 21.90           | 21.06       | 8,529.22              | 422.84       | 176.34       | 177.07                  | 14.44                   | 14.29                  | -8.58                 |
| 8,597.00                                       | 27.61           | 21.94       | 8,572.79              | 441.53       | 183.71       | 184.48                  | 11.92                   | 11.90                  | 1.83                  |

# LEAM Drilling Services

## Survey Report

Company: Devon Energy  
Project: Eddy County, NM (NAD-83)  
Site: Turquoise  
Well: Turquoise PWU 27 9H  
Wellbore: OH  
Design: OH

Local Co-ordinate Reference: Well Turquoise PWU 27 9H  
TVD Reference: 3344.70' GE + 26' KB @ 3370.70usft  
MD Reference: 3344.70' GE + 26' KB @ 3370.70usft  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
Database: EDM 5000.1 Multi User Db

### 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) |
|-------------------------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 8,644.00                                        | 30.86           | 30.90       | 8,613.82              | 461.99       | 193.98       | 194.79                  | 11.58                   | 6.91                   | 19.06                 |
| 8,692.00                                        | 30.60           | 42.85       | 8,655.12              | 481.53       | 208.63       | 209.47                  | 12.72                   | -0.54                  | 24.90                 |
| 8,739.00                                        | 29.99           | 56.74       | 8,695.75              | 496.76       | 226.61       | 227.47                  | 14.94                   | -1.30                  | 29.55                 |
| 8,787.00                                        | 31.57           | 67.84       | 8,737.02              | 508.13       | 248.28       | 249.16                  | 12.06                   | 3.29                   | 22.71                 |
| 8,835.00                                        | 34.91           | 74.14       | 8,777.17              | 516.67       | 273.12       | 274.02                  | 10.17                   | 6.96                   | 13.54                 |
| 8,881.00                                        | 37.37           | 76.08       | 8,814.32              | 523.62       | 289.34       | 300.25                  | 5.90                    | 5.35                   | 4.22                  |
| 8,928.00                                        | 40.19           | 76.78       | 8,850.96              | 530.53       | 327.95       | 328.88                  | 6.07                    | 6.00                   | 1.49                  |
| 8,954.97                                        | 42.07           | 76.78       | 8,871.27              | 534.58       | 345.22       | 346.15                  | 6.96                    | 6.96                   | 0.00                  |
| FTP (Turquoise 9H) 458' FNL, 100' FWL of Sec 27 |                 |             |                       |              |              |                         |                         |                        |                       |
| 8,976.00                                        | 43.53           | 76.78       | 8,886.70              | 537.85       | 359.13       | 360.07                  | 6.96                    | 6.96                   | 0.00                  |
| 9,023.00                                        | 48.72           | 77.66       | 8,919.26              | 545.33       | 392.16       | 393.11                  | 11.12                   | 11.04                  | 1.87                  |
| 9,070.00                                        | 53.64           | 78.19       | 8,948.72              | 552.98       | 427.96       | 428.93                  | 10.50                   | 10.47                  | 1.13                  |
| 9,116.00                                        | 58.21           | 77.31       | 8,974.48              | 561.07       | 465.18       | 466.16                  | 10.06                   | 9.93                   | -1.91                 |
| 9,164.00                                        | 62.78           | 78.19       | 8,998.12              | 569.93       | 506.00       | 506.99                  | 9.65                    | 9.52                   | 1.83                  |
| 9,211.00                                        | 66.74           | 79.77       | 9,018.16              | 578.04       | 547.72       | 548.73                  | 8.96                    | 8.43                   | 3.36                  |
| 9,259.00                                        | 69.73           | 81.88       | 9,035.95              | 585.14       | 591.72       | 592.74                  | 7.45                    | 6.23                   | 4.40                  |
| 9,306.00                                        | 72.19           | 85.04       | 9,051.29              | 590.19       | 635.85       | 636.88                  | 8.23                    | 5.23                   | 6.72                  |
| 9,353.00                                        | 76.33           | 86.10       | 9,064.04              | 593.68       | 680.94       | 681.98                  | 9.07                    | 8.81                   | 2.26                  |
| 9,400.00                                        | 81.18           | 88.21       | 9,073.21              | 595.96       | 726.96       | 728.00                  | 11.18                   | 10.28                  | 4.49                  |
| 9,448.00                                        | 85.74           | 88.81       | 9,078.68              | 597.16       | 774.62       | 775.66                  | 9.65                    | 9.54                   | 1.46                  |
| 9,495.00                                        | 87.23           | 89.08       | 9,081.56              | 597.98       | 821.53       | 822.57                  | 3.19                    | 3.17                   | 0.36                  |
| 9,562.00                                        | 89.87           | 88.91       | 9,083.26              | 599.15       | 886.49       | 889.53                  | 3.95                    | 3.94                   | -0.25                 |
| 9,655.00                                        | 89.34           | 89.79       | 9,083.90              | 600.21       | 981.48       | 982.53                  | 1.10                    | -0.57                  | 0.95                  |
| 9,750.00                                        | 89.43           | 89.96       | 9,084.92              | 600.42       | 1,076.47     | 1,077.52                | 0.20                    | 0.09                   | 0.18                  |
| 9,845.00                                        | 88.37           | 89.96       | 9,086.74              | 600.48       | 1,171.45     | 1,172.50                | 1.12                    | -1.12                  | 0.00                  |
| 9,939.00                                        | 89.16           | 89.96       | 9,088.77              | 600.55       | 1,265.43     | 1,266.48                | 0.84                    | 0.84                   | 0.00                  |
| 10,033.00                                       | 88.64           | 90.49       | 9,090.57              | 600.18       | 1,359.41     | 1,360.46                | 0.79                    | -0.55                  | 0.56                  |
| 10,127.00                                       | 88.90           | 90.49       | 9,092.59              | 599.38       | 1,453.39     | 1,454.43                | 0.28                    | 0.28                   | 0.00                  |
| 10,221.00                                       | 89.78           | 90.31       | 9,093.68              | 598.72       | 1,547.38     | 1,548.42                | 0.96                    | 0.94                   | -0.19                 |
| 10,316.00                                       | 89.08           | 91.02       | 9,094.62              | 597.62       | 1,642.37     | 1,643.41                | 1.05                    | -0.74                  | 0.75                  |
| 10,411.00                                       | 89.87           | 90.31       | 9,095.49              | 596.51       | 1,737.35     | 1,738.39                | 1.12                    | 0.83                   | -0.75                 |
| 10,505.00                                       | 89.60           | 90.14       | 9,095.93              | 596.14       | 1,831.35     | 1,832.39                | 0.34                    | -0.29                  | -0.18                 |
| 10,600.00                                       | 90.75           | 89.96       | 9,095.64              | 596.06       | 1,926.35     | 1,927.39                | 1.23                    | 1.21                   | -0.19                 |
| 10,695.00                                       | 90.66           | 90.84       | 9,094.47              | 595.40       | 2,021.34     | 2,022.38                | 0.93                    | -0.09                  | 0.93                  |
| 10,790.00                                       | 89.08           | 91.37       | 9,094.66              | 593.57       | 2,116.32     | 2,117.35                | 1.75                    | -1.66                  | 0.56                  |
| 10,884.00                                       | 89.87           | 91.19       | 9,095.54              | 591.47       | 2,210.29     | 2,211.32                | 0.86                    | 0.84                   | -0.19                 |
| 10,978.00                                       | 89.96           | 91.54       | 9,095.68              | 589.23       | 2,304.26     | 2,305.29                | 0.38                    | 0.10                   | 0.37                  |
| 11,072.00                                       | 88.90           | 91.72       | 9,096.62              | 586.55       | 2,398.22     | 2,399.24                | 1.14                    | -1.13                  | 0.19                  |
| 11,166.00                                       | 89.16           | 91.02       | 9,096.21              | 584.31       | 2,492.18     | 2,493.19                | 0.79                    | 0.28                   | -0.74                 |
| 11,261.00                                       | 89.52           | 90.84       | 9,099.30              | 582.77       | 2,587.16     | 2,588.17                | 0.42                    | 0.38                   | -0.19                 |
| 11,355.00                                       | 89.08           | 89.44       | 9,100.45              | 582.54       | 2,681.15     | 2,682.16                | 1.56                    | -0.47                  | -1.49                 |
| 11,448.00                                       | 89.60           | 88.91       | 9,101.53              | 583.89       | 2,775.13     | 2,776.15                | 0.79                    | 0.55                   | -0.56                 |
| 11,543.00                                       | 90.75           | 89.08       | 9,101.25              | 585.54       | 2,869.12     | 2,870.13                | 1.24                    | 1.22                   | 0.18                  |

# LEAM Drilling Services

## Survey Report

|                  |                          |                                     |                                    |
|------------------|--------------------------|-------------------------------------|------------------------------------|
| <b>Company:</b>  | Devon Energy             | <b>Local Co-ordinate Reference:</b> | Well Turquoise PWU 27 9H           |
| <b>Project:</b>  | Eddy County, NM (NAD-83) | <b>TVD Reference:</b>               | 3344.70' GE + 26' KB @ 3370.70usft |
| <b>Site:</b>     | Turquoise                | <b>MD Reference:</b>                | 3344.70' GE + 26' KB @ 3370.70usft |
| <b>Well:</b>     | Turquoise PWU 27 9H      | <b>North Reference:</b>             | Grid                               |
| <b>Wellbore:</b> | OH                       | <b>Survey Calculation Method:</b>   | Minimum Curvature                  |
| <b>Design:</b>   | OH                       | <b>Database:</b>                    | EDM 5000.1 Multi User Db           |

### 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) |
|----------------------------------------------------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|
| 11,637.00                                                            | 90.13              | 88.91          | 9,100.53                    | 587.19          | 2,963.10        | 2,964.12                      | 0.68                          | -0.66                        | -0.18                       |
| 11,731.00                                                            | 89.43              | 88.73          | 9,100.89                    | 589.12          | 3,057.08        | 3,058.10                      | 0.77                          | -0.74                        | -0.19                       |
| 11,825.00                                                            | 90.04              | 88.73          | 9,101.32                    | 591.21          | 3,151.05        | 3,152.08                      | 0.65                          | 0.65                         | 0.00                        |
| 11,919.00                                                            | 89.60              | 89.08          | 9,101.62                    | 593.00          | 3,245.04        | 3,246.07                      | 0.60                          | -0.47                        | 0.37                        |
| 12,014.00                                                            | 88.90              | 88.91          | 9,102.86                    | 594.67          | 3,340.01        | 3,341.04                      | 0.76                          | -0.74                        | -0.18                       |
| 12,108.00                                                            | 89.87              | 88.56          | 9,103.87                    | 596.74          | 3,433.98        | 3,435.02                      | 1.10                          | 1.03                         | -0.37                       |
| 12,203.00                                                            | 91.28              | 88.73          | 9,102.92                    | 598.99          | 3,528.95        | 3,529.99                      | 1.49                          | 1.48                         | 0.18                        |
| 12,305.00                                                            | 91.19              | 88.38          | 9,100.72                    | 601.56          | 3,630.89        | 3,631.94                      | 0.35                          | -0.09                        | -0.34                       |
| 12,399.00                                                            | 89.08              | 87.85          | 9,100.50                    | 604.65          | 3,724.84        | 3,725.89                      | 2.31                          | -2.24                        | -0.56                       |
| 12,494.00                                                            | 88.02              | 88.56          | 9,102.90                    | 607.63          | 3,819.76        | 3,820.81                      | 1.34                          | -1.12                        | 0.75                        |
| 12,588.00                                                            | 87.05              | 88.56          | 9,106.94                    | 609.99          | 3,913.64        | 3,914.70                      | 1.03                          | -1.03                        | 0.00                        |
| 12,682.00                                                            | 87.23              | 88.56          | 9,111.63                    | 612.35          | 4,007.49        | 4,008.55                      | 0.19                          | 0.19                         | 0.00                        |
| 12,777.00                                                            | 87.67              | 88.91          | 9,115.86                    | 614.44          | 4,102.37        | 4,103.44                      | 0.59                          | 0.46                         | 0.37                        |
| 12,871.00                                                            | 88.11              | 88.91          | 9,119.32                    | 616.23          | 4,196.29        | 4,197.36                      | 0.47                          | 0.47                         | 0.00                        |
| 12,965.00                                                            | 89.25              | 89.44          | 9,121.49                    | 617.58          | 4,290.26        | 4,291.33                      | 1.34                          | 1.21                         | 0.56                        |
| 13,059.00                                                            | 87.14              | 88.56          | 9,124.45                    | 619.22          | 4,384.19        | 4,385.26                      | 2.43                          | -2.24                        | -0.94                       |
| 13,154.00                                                            | 86.35              | 88.03          | 9,129.84                    | 622.04          | 4,478.99        | 4,480.07                      | 1.00                          | -0.83                        | -0.56                       |
| 13,248.00                                                            | 86.70              | 89.44          | 9,135.54                    | 624.11          | 4,572.80        | 4,573.88                      | 1.54                          | 0.37                         | 1.50                        |
| 13,342.00                                                            | 87.85              | 89.96          | 9,140.01                    | 624.61          | 4,666.69        | 4,667.77                      | 1.34                          | 1.22                         | 0.55                        |
| 13,437.00                                                            | 88.02              | 90.31          | 9,143.43                    | 624.38          | 4,761.62        | 4,762.71                      | 0.41                          | 0.18                         | 0.37                        |
| 13,531.00                                                            | 88.02              | 90.49          | 9,146.88                    | 623.73          | 4,855.57        | 4,856.65                      | 0.19                          | 0.00                         | 0.19                        |
| 13,625.00                                                            | 88.37              | 90.67          | 9,149.64                    | 622.77          | 4,949.51        | 4,950.59                      | 0.42                          | 0.37                         | 0.19                        |
| 13,719.00                                                            | 88.81              | 91.02          | 9,151.95                    | 621.39          | 5,043.47        | 5,044.55                      | 0.60                          | 0.47                         | 0.37                        |
| 13,813.00                                                            | 88.90              | 91.02          | 9,153.83                    | 619.72          | 5,137.44        | 5,138.51                      | 0.10                          | 0.10                         | 0.00                        |
| 13,907.00                                                            | 89.25              | 91.37          | 9,155.35                    | 617.76          | 5,231.41        | 5,232.48                      | 0.53                          | 0.37                         | 0.37                        |
| 14,001.00                                                            | 89.87              | 91.72          | 9,156.07                    | 615.22          | 5,325.37        | 5,326.44                      | 0.76                          | 0.66                         | 0.37                        |
| 14,080.00                                                            | 90.48              | 92.07          | 9,155.83                    | 612.61          | 5,404.33        | 5,405.39                      | 0.89                          | 0.77                         | 0.44                        |
| LTP (Turquoise 9H) 366' FNL, 100' FEL of Sec 27                      |                    |                |                             |                 |                 |                               |                               |                              |                             |
| 14,155.00                                                            | 90.48              | 92.07          | 9,155.20                    | 609.90          | 5,479.27        | 5,480.33                      | 0.00                          | 0.00                         | 0.00                        |
| PBHL (Turquoise 9H) - BHL (Turquoise 9H) 360' FNL, 37' FEL of Sec 27 |                    |                |                             |                 |                 |                               |                               |                              |                             |

# LEAM Drilling Services

## Survey Report

Company: Devon Energy  
 Project: Eddy County, NM (NAD-83)  
 Site: Turquoise  
 Well: Turquoise PWU 27 9H  
 Wellbore: OH  
 Design: OH

Local Co-ordinate Reference: Well Turquoise PWU 27 9H  
 TVD Reference: 3344.70' GE + 26' KB @ 3370.70usft  
 MD Reference: 3344.70' GE + 26' KB @ 3370.70usft  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature  
 Database: EDM 5000.1 Multi User Db

### 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         |
|-------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------|---------------|-----------------|-----------------|--------------------|-------------------|-------------------|-------------------|
| SHL (Turquoise 9H) 992<br>- actual wellpath hits target center<br>- Point                                                                       | 0.00             | 0.00            | 0.00          | 0.00            | 0.00            | 595,319.97         | 621,766.42        | 32° 38' 10.7221 N | 104° 4' 19.3983 W |
| KOP (Turquoise 9H) 595<br>- actual wellpath hits target center<br>- Point                                                                       | 0.00             | 0.00            | 8,390.08      | 395.66          | 163.41          | 595,715.63         | 621,929.83        | 32° 38' 14.6333 N | 104° 4' 17.4758 W |
| FTP (Turquoise 9H) 458'<br>- actual wellpath hits target center<br>- Point                                                                      | 0.00             | 0.00            | 8,871.27      | 534.58          | 345.22          | 595,854.55         | 622,111.64        | 32° 38' 16.0035 N | 104° 4' 15.3456 W |
| BHL (Turquoise 9H) 360<br>- actual wellpath hits target center<br>- Point                                                                       | 0.00             | 0.00            | 9,155.20      | 609.90          | 5,479.27        | 595,929.87         | 627,245.69        | 32° 38' 16.6193 N | 104° 3' 15.3011 W |
| LTP (Turquoise 9H) 356'<br>- actual wellpath misses target center by 11.51usft at 14080.00usft MD (9155.83 TVD, 612.61 N, 5404.33 E)<br>- Point | 0.00             | 0.00            | 9,155.73      | 612.19          | 5,415.83        | 595,932.16         | 627,182.25        | 32° 38' 16.6436 N | 104° 3' 16.0430 W |

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

## Devon Energy

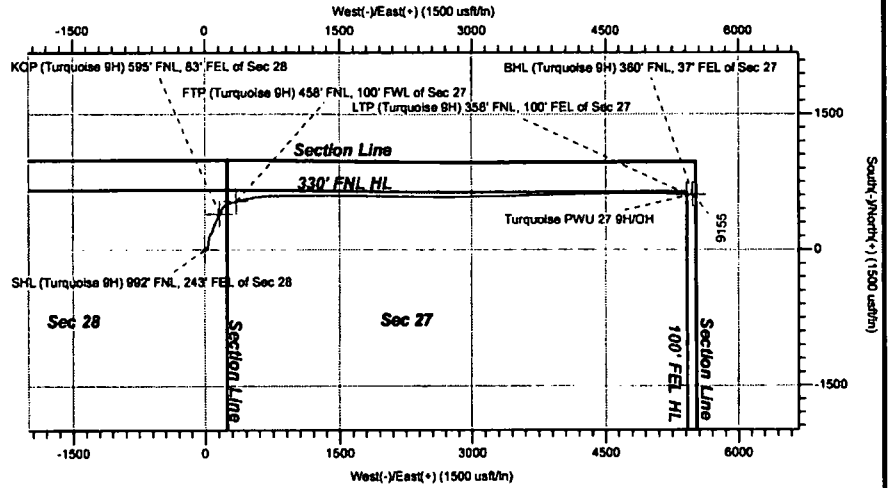
Project: Eddy County, NM (NAD-83)  
 Site: Turquoise  
 Well: Turquoise PWU 27 9H  
 Wellbore: OH  
 Design: OH

# devon



Azimuths to Grid North  
 True North: -0.14°  
 Magnetic North: 7.23°  
 Magnetic Field  
 Strength: 48074.2aT  
 Dip Angle: 60.43°  
 Date: 8/22/2018  
 Model: HDGM

PROJECT DETAILS: Eddy County, NM (NAD-83)  
 Geodetic System: US State Plane 1983  
 Datum: North American Datum 1983  
 Ellipsoid: GRS 1980  
 Zone: New Mexico Eastern Zone

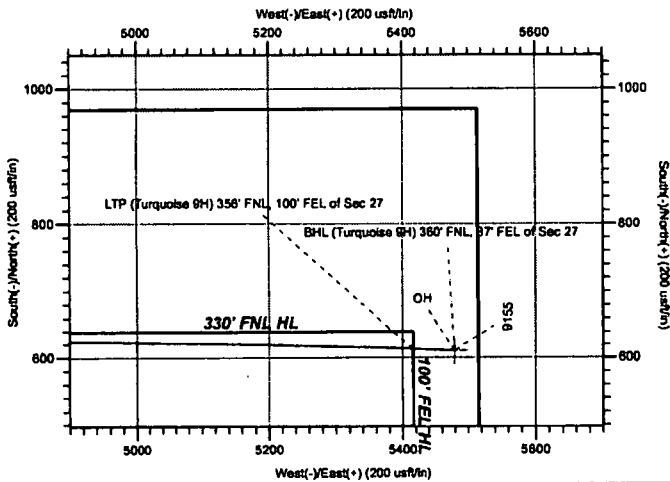


### DESIGN TARGET DETAILS

| Name               | TVD     | +N-S   | +E-W    | Northing  | Easting   | Latitude          | Longitude         |
|--------------------|---------|--------|---------|-----------|-----------|-------------------|-------------------|
| BHL (Turquoise 9H) | 9155.20 | 809.90 | 5479.27 | 595929.87 | 627245.69 | 32° 38' 18.5193 N | 104° 3' 15.3011 W |
| FTP (Turquoise 9H) | 8871.27 | 534.58 | 345.22  | 595854.55 | 622111.64 | 32° 38' 18.0035 N | 104° 4' 15.3458 W |
| KOP (Turquoise 9H) | 8300.00 | 395.86 | 163.41  | 595115.63 | 621929.83 | 32° 38' 14.8333 N | 104° 4' 17.4758 W |
| LTP (Turquoise 9H) | 9155.73 | 612.19 | 5415.83 | 595932.16 | 627182.25 | 32° 38' 18.6438 N | 104° 3' 16.0430 W |
| SHL (Turquoise 9H) | 0.00    | 0.00   | 0.00    | 595319.97 | 621768.42 | 32° 38' 10.7221 N | 104° 4' 19.3983 W |

### ACTUAL LINE CALLS

SHL: 992' FNL, 243' FEL of Sec 28  
 BHL: 360' FNL, 37' FEL of Sec 27  
 KOP: 595' FNL, 83' FEL of Sec 28  
 FTP: 458' FNL, 100' FWL of Sec 27  
 LTP: 356' FNL, 100' FEL of Sec 27



LEAM DRILLING SYSTEMS LLC  
 2010 East Davis, Conroe, Texas 77301  
 Phone: 936/756-7577, Fax: 936/756-7595

Design: OH (Turquoise PWU 27 9H/OM)  
 Created By: Dustin Ault  
 Date: 9/17/2018  
 Approved: \_\_\_\_\_  
 Date: \_\_\_\_\_