



HOBBS OCD

SEP 19 2018

RECEIVED

February 28, 2018

Devon Energy Production Company, LP  
Well: Thistle Unit 86H  
County/Parish: Lea County, NM

LEAM MWD: (OH) from 208' MD – 18,008' MD  
Projection: 18,067' MD

This Borehole Survey taken between 02/09/2018 and 02/25/2018 had been conducted and calculated according to the highest professional standards and complies with all known State and Federal requirements.

Reviewed and Approved:

Date: February 28, 2018



## Survey Certification Form

State of New Mexico

Lea County

I, Randy W. Rakowitz, certify that; I am employed by LEAM Drilling Services, that I did on the day(s) of 02/09/2018 through 02/25/2018, conduct or supervise the taking of MWD Survey from a depth of 208' MD to 18,067' MD; that the data is true, correct, complete and within the limitations of the tools as set forth by LEAM Drilling Services, that I am authorized and qualified to make this report; that this survey was conducted at the request of Devon Energy Production Company, LP for the Thistle Unit 86H in Lea County, New Mexico; and that I reviewed this report and find that it conforms to the principals and procedures as set forth by LEAM Drilling Services.

A handwritten signature in black ink, appearing to read 'Randy W. Rakowitz', is written over a solid horizontal line.

Randy W. Rakowitz  
MWD Operations Coordinator

# LEAM Drilling Services

## Survey Report

Company: Devon Energy  
Project: Lea County, NM (NAD-83)  
Site: Thistle Unit Sec 22-27 Trac Pad  
Well: Thistle Unit 86H  
Wellbore: OH  
Design: OH

Local Co-ordinate Reference: Well Thistle Unit 86H  
TVD Reference: 3710.4' GE + 23.5' KB @ 3733.90usft  
MD Reference: 3710.4' GE + 23.5' KB @ 3733.90usft  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
Database: EDM 5000.1 MULTI User DB

Project: Lea County, NM (NAD-83)  
Map System: US State Plane 1983  
Geo Datum: North American Datum 1983  
Map Zone: New Mexico Eastern Zone

System Datum: Mean Sea Level

Site: Thistle Unit Sec 22-27 Trac Pad

Site Position: Northing: 472,548.43 usft Latitude: 32° 17' 48.4331 N  
From: Map Easting: 777,932.69 usft Longitude: 103° 34' 3.4563 W  
Position Uncertainty: 0.00 usft Slot Radius: 13-3/16 " Grid Convergence: 0.41 "

Well: Thistle Unit 86H

Well Position: +N-S 0.00 usft Northing: 472,469.44 usft Latitude: 32° 17' 47.5772 N  
+E-W 0.00 usft Easting: 778,983.15 usft Longitude: 103° 33' 51.2251 W  
Position Uncertainty: 0.00 usft Wellhead Elevation: 0.00 usft Ground Level: 3,710.40 usft

Wellbore: OH

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|-----------|------------|-------------|-----------------|---------------|---------------------|
|           | HDGM       | 1/17/2018   | 6.82            | 60.07         | 48,121              |

Design: OH

Audit Notes:

Version: 1.0 Phase: ACTUAL Tie On Depth: 0.00  
Vertical Section: Depth From (TVD) +N-S +E-W Direction  
(usft) (usft) (usft) (°)  
0.00 0.00 0.00 180.00

Survey Program Date: 2/26/2018

| From (usft) | To (usft) | Survey (Wellbore) | Tool Name     | Description     |
|-------------|-----------|-------------------|---------------|-----------------|
| 208.00      | 10,861.00 | Survey #1 (OH)    | LEAM MWD+HDGM | MWD+HDGM        |
| 10,884.00   | 18,008.00 | Survey #2 (OH)    | MWD+IFR1      | OWSG MWD + IFR1 |
| 18,067.00   | 18,067.00 | Survey #3 (OH)    | Project       | Projection      |

Survey

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N-S (usft) | +E-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Bulld Rate (°/100usft) | Turn Rate (°/100usft) |
|-----------------------|-----------------|-------------|-----------------------|-------------|-------------|-------------------------|-------------------------|------------------------|-----------------------|
| 0.00                  | 0.00            | 0.00        | 0.00                  | 0.00        | 0.00        | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 208.00                | 0.80            | 41.30       | 207.99                | 1.09        | 0.96        | -1.09                   | 0.38                    | 0.38                   | 0.00                  |
| 268.00                | 0.90            | 41.50       | 267.99                | 1.76        | 1.55        | -1.76                   | 0.17                    | 0.17                   | 0.33                  |
| 329.00                | 1.00            | 45.30       | 328.98                | 2.49        | 2.24        | -2.49                   | 0.19                    | 0.16                   | 6.23                  |
| 511.00                | 0.50            | 46.40       | 510.96                | 4.16        | 3.95        | -4.16                   | 0.27                    | -0.27                  | 0.60                  |
| 601.00                | 0.40            | 44.10       | 600.96                | 4.65        | 4.45        | -4.65                   | 0.11                    | -0.11                  | -2.56                 |
| 783.00                | 0.40            | 35.50       | 782.95                | 5.63        | 5.26        | -5.63                   | 0.03                    | 0.00                   | -4.73                 |
| 875.00                | 0.50            | 43.40       | 874.95                | 6.18        | 5.72        | -6.18                   | 0.13                    | 0.11                   | 8.59                  |
| 966.00                | 0.60            | 36.20       | 965.95                | 6.85        | 6.28        | -6.85                   | 0.13                    | 0.11                   | -7.91                 |

# LEAM Drilling Services

## Survey Report

Company: Devon Energy  
Project: Lea County, NM (NAD-83)  
Site: Thistle Unit Sec 22-27 Trac Pad  
Well: Thistle Unit 86H  
Wellbore: OH  
Design: OH

Local Co-ordinate Reference: Well Thistle Unit 86H  
TVD Reference: 3710.4' GE + 23.5' KB @ 3733.90usft  
MD Reference: 3710.4' GE + 23.5' KB @ 3733.90usft  
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) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 1,057.00              | 0.60            | 48.50       | 1,056.94              | 7.55         | 6.92         | -7.55                   | 0.14                    | 0.00                   | 13.52                 |
| 1,148.00              | 0.70            | 40.60       | 1,147.94              | 8.29         | 7.63         | -8.29                   | 0.15                    | 0.11                   | -8.68                 |
| 1,240.00              | 0.70            | 21.40       | 1,239.93              | 9.24         | 8.21         | -9.24                   | 0.25                    | 0.00                   | -20.87                |
| 1,331.00              | 0.70            | 27.20       | 1,330.92              | 10.25        | 8.66         | -10.25                  | 0.08                    | 0.00                   | 6.37                  |
| 1,423.00              | 0.60            | 17.70       | 1,422.92              | 11.21        | 9.07         | -11.21                  | 0.16                    | -0.11                  | -10.33                |
| 1,515.00              | 0.40            | 45.00       | 1,514.91              | 11.90        | 9.44         | -11.90                  | 0.33                    | -0.22                  | 29.67                 |
| 1,607.00              | 0.30            | 4.00        | 1,606.91              | 12.36        | 9.68         | -12.36                  | 0.29                    | -0.11                  | -44.57                |
| 1,698.00              | 0.40            | 8.90        | 1,697.91              | 12.92        | 9.75         | -12.92                  | 0.11                    | 0.11                   | 5.38                  |
| 1,794.00              | 0.10            | 316.50      | 1,793.91              | 13.31        | 9.74         | -13.31                  | 0.36                    | -0.31                  | -54.58                |
| 1,889.00              | 0.30            | 321.50      | 1,888.91              | 13.56        | 9.53         | -13.56                  | 0.21                    | 0.21                   | 5.26                  |
| 1,984.00              | 0.10            | 169.90      | 1,983.91              | 13.68        | 9.39         | -13.68                  | 0.41                    | -0.21                  | -159.58               |
| 2,079.00              | 0.20            | 110.20      | 2,078.91              | 13.54        | 9.56         | -13.54                  | 0.18                    | 0.11                   | -62.84                |
| 2,174.00              | 0.20            | 101.00      | 2,173.91              | 13.45        | 9.88         | -13.45                  | 0.03                    | 0.00                   | -9.68                 |
| 2,269.00              | 0.10            | 79.20       | 2,268.91              | 13.43        | 10.12        | -13.43                  | 0.12                    | -0.11                  | -22.95                |
| 2,364.00              | 0.20            | 246.60      | 2,363.91              | 13.38        | 10.05        | -13.38                  | 0.31                    | 0.11                   | 176.21                |
| 2,459.00              | 0.10            | 75.70       | 2,458.91              | 13.34        | 9.98         | -13.34                  | 0.31                    | -0.11                  | -179.89               |
| 2,555.00              | 0.30            | 255.40      | 2,554.91              | 13.29        | 9.82         | -13.29                  | 0.42                    | 0.21                   | 187.19                |
| 2,650.00              | 0.10            | 29.00       | 2,649.91              | 13.30        | 9.62         | -13.30                  | 0.40                    | -0.21                  | 140.63                |
| 2,746.00              | 0.30            | 76.80       | 2,745.91              | 13.43        | 9.90         | -13.43                  | 0.25                    | 0.21                   | 49.79                 |
| 2,840.00              | 0.30            | 64.30       | 2,839.90              | 13.60        | 10.36        | -13.60                  | 0.07                    | 0.00                   | -13.30                |
| 2,935.00              | 0.20            | 350.60      | 2,934.90              | 13.87        | 10.56        | -13.87                  | 0.33                    | -0.11                  | -77.58                |
| 3,031.00              | 0.40            | 316.00      | 3,030.90              | 14.27        | 10.30        | -14.27                  | 0.27                    | 0.21                   | -36.04                |
| 3,126.00              | 0.40            | 8.40        | 3,125.90              | 14.84        | 10.12        | -14.84                  | 0.37                    | 0.00                   | 55.16                 |
| 3,222.00              | 0.20            | 276.30      | 3,221.90              | 15.19        | 10.00        | -15.19                  | 0.47                    | -0.21                  | -95.94                |
| 3,317.00              | 0.10            | 194.20      | 3,316.90              | 15.13        | 9.82         | -15.13                  | 0.22                    | -0.11                  | -86.42                |
| 3,413.00              | 0.30            | 326.20      | 3,412.90              | 15.26        | 9.66         | -15.26                  | 0.39                    | 0.21                   | 137.50                |
| 3,509.00              | 0.70            | 16.70       | 3,508.90              | 16.03        | 9.69         | -16.03                  | 0.58                    | 0.42                   | 52.60                 |
| 3,604.00              | 0.80            | 356.30      | 3,603.89              | 17.24        | 9.81         | -17.24                  | 0.30                    | 0.11                   | -21.47                |
| 3,700.00              | 1.10            | 17.50       | 3,699.87              | 18.79        | 10.04        | -18.79                  | 0.48                    | 0.31                   | 22.08                 |
| 3,796.00              | 2.20            | 3.80        | 3,795.83              | 21.51        | 10.44        | -21.51                  | 1.21                    | 1.15                   | -14.27                |
| 3,891.00              | 3.50            | 6.60        | 3,890.71              | 26.21        | 10.90        | -26.21                  | 1.38                    | 1.37                   | 2.95                  |
| 3,987.00              | 4.70            | 8.20        | 3,986.47              | 33.01        | 11.79        | -33.01                  | 1.26                    | 1.25                   | 1.67                  |
| 4,082.00              | 5.60            | 12.40       | 4,081.08              | 41.39        | 13.34        | -41.39                  | 1.03                    | 0.95                   | 4.42                  |
| 4,178.00              | 5.50            | 12.40       | 4,176.63              | 50.46        | 15.34        | -50.46                  | 0.10                    | -0.10                  | 0.00                  |
| 4,273.00              | 5.00            | 11.40       | 4,271.23              | 58.97        | 17.13        | -58.97                  | 0.54                    | -0.53                  | -1.05                 |
| 4,369.00              | 5.20            | 21.90       | 4,366.86              | 67.10        | 19.58        | -67.10                  | 0.99                    | 0.21                   | 10.94                 |
| 4,465.00              | 5.10            | 32.50       | 4,462.47              | 74.74        | 23.50        | -74.74                  | 1.00                    | -0.10                  | 11.04                 |
| 4,560.00              | 4.70            | 25.50       | 4,557.12              | 81.81        | 27.44        | -81.81                  | 0.76                    | -0.42                  | -7.37                 |
| 4,656.00              | 4.70            | 15.40       | 4,652.80              | 89.16        | 30.18        | -89.16                  | 0.86                    | 0.00                   | -10.52                |
| 4,751.00              | 5.50            | 13.90       | 4,747.43              | 97.33        | 32.31        | -97.33                  | 0.85                    | 0.84                   | -1.58                 |
| 4,847.00              | 5.70            | 17.00       | 4,842.97              | 106.35       | 34.81        | -106.35                 | 0.38                    | 0.21                   | 3.23                  |
| 4,942.00              | 5.20            | 21.90       | 4,937.54              | 114.86       | 37.79        | -114.86                 | 0.72                    | -0.53                  | 5.16                  |
| 5,038.00              | 5.00            | 14.70       | 5,033.16              | 122.94       | 40.48        | -122.94                 | 0.70                    | -0.21                  | -7.50                 |

# LEAM Drilling Services

## Survey Report

Company: Devon Energy  
Project: Lea County, NM (NAD-83)  
Site: Thistle Unit Sec 22-27 Trac Pad  
Well: Thistle Unit 86H  
Wellbore: OH  
Design: OH

Local Co-ordinate Reference: Well Thistle Unit 86H  
TVD Reference: 3710.4' GE + 23.5' KB @ 3733.90usft  
MD Reference: 3710.4' GE + 23.5' KB @ 3733.90usft  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
Database: 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) |
|-----------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|
| 5,134.00                    | 5.50               | 3.30           | 5,128.76                    | 131.58          | 41.80           | -131.58                       | 1.20                          | 0.52                         | -11.88                      |
| 5,226.00                    | 5.20               | 1.00           | 5,220.36                    | 140.15          | 42.13           | -140.15                       | 0.40                          | -0.33                        | -2.50                       |
| 5,331.00                    | 4.70               | 2.10           | 5,324.97                    | 149.21          | 42.37           | -149.21                       | 0.48                          | -0.48                        | 1.05                        |
| 5,427.00                    | 4.30               | 358.20         | 5,420.67                    | 156.73          | 42.40           | -156.73                       | 0.52                          | -0.42                        | -4.06                       |
| 5,521.00                    | 4.20               | 354.50         | 5,514.41                    | 163.68          | 41.96           | -163.68                       | 0.31                          | -0.11                        | -3.94                       |
| 5,616.00                    | 4.00               | 353.60         | 5,609.17                    | 170.44          | 41.26           | -170.44                       | 0.22                          | -0.21                        | -0.95                       |
| 5,711.00                    | 3.30               | 348.00         | 5,703.98                    | 176.41          | 40.32           | -176.41                       | 0.83                          | -0.74                        | -5.89                       |
| 5,806.00                    | 1.90               | 345.00         | 5,798.88                    | 180.60          | 39.34           | -180.60                       | 1.48                          | -1.47                        | -3.16                       |
| 5,901.00                    | 1.10               | 15.60          | 5,893.84                    | 183.00          | 39.18           | -183.00                       | 1.16                          | -0.84                        | 32.21                       |
| 5,996.00                    | 0.70               | 104.00         | 5,988.84                    | 183.74          | 39.99           | -183.74                       | 1.35                          | -0.42                        | 93.05                       |
| 6,091.00                    | 0.70               | 140.10         | 6,083.83                    | 183.15          | 40.93           | -183.15                       | 0.46                          | 0.00                         | 38.00                       |
| 6,187.00                    | 0.70               | 124.40         | 6,179.82                    | 182.37          | 41.79           | -182.37                       | 0.20                          | 0.00                         | -16.35                      |
| 6,282.00                    | 0.50               | 110.40         | 6,274.82                    | 181.90          | 42.65           | -181.90                       | 0.26                          | -0.21                        | -14.74                      |
| 6,378.00                    | 0.40               | 119.30         | 6,370.81                    | 181.59          | 43.34           | -181.59                       | 0.13                          | -0.10                        | 9.27                        |
| 6,473.00                    | 0.40               | 143.60         | 6,465.81                    | 181.16          | 43.82           | -181.16                       | 0.18                          | 0.00                         | 25.58                       |
| 6,568.00                    | 0.40               | 112.80         | 6,560.81                    | 180.77          | 44.33           | -180.77                       | 0.22                          | 0.00                         | -32.42                      |
| 6,663.00                    | 0.20               | 60.60          | 6,655.81                    | 180.72          | 44.78           | -180.72                       | 0.34                          | -0.21                        | -54.95                      |
| 6,759.00                    | 0.10               | 239.90         | 6,751.81                    | 180.76          | 44.85           | -180.76                       | 0.31                          | -0.10                        | 186.77                      |
| 6,852.00                    | 0.20               | 286.50         | 6,844.81                    | 180.76          | 44.62           | -180.76                       | 0.16                          | 0.11                         | 50.11                       |
| 6,948.00                    | 0.10               | 269.30         | 6,940.81                    | 180.81          | 44.38           | -180.81                       | 0.11                          | -0.10                        | -17.92                      |
| 7,043.00                    | 0.30               | 296.00         | 7,035.81                    | 180.92          | 44.07           | -180.92                       | 0.23                          | 0.21                         | 28.11                       |
| 7,139.00                    | 0.30               | 241.00         | 7,131.81                    | 180.91          | 43.63           | -180.91                       | 0.29                          | 0.00                         | -57.29                      |
| 7,234.00                    | 0.40               | 248.00         | 7,226.80                    | 180.66          | 43.10           | -180.66                       | 0.11                          | 0.11                         | 7.37                        |
| 7,329.00                    | 0.50               | 219.30         | 7,321.80                    | 180.22          | 42.53           | -180.22                       | 0.26                          | 0.11                         | -30.21                      |
| 7,424.00                    | 0.30               | 204.60         | 7,416.80                    | 179.67          | 42.17           | -179.67                       | 0.23                          | -0.21                        | -15.47                      |
| 7,520.00                    | 0.30               | 223.90         | 7,512.80                    | 179.26          | 41.89           | -179.26                       | 0.10                          | 0.00                         | 20.10                       |
| 7,615.00                    | 0.50               | 195.40         | 7,607.80                    | 178.68          | 41.61           | -178.68                       | 0.29                          | 0.21                         | -30.00                      |
| 7,710.00                    | 0.60               | 192.40         | 7,702.79                    | 177.80          | 41.39           | -177.80                       | 0.11                          | 0.11                         | -3.16                       |
| 7,806.00                    | 0.80               | 217.90         | 7,798.78                    | 176.78          | 40.87           | -176.78                       | 0.38                          | 0.21                         | 26.56                       |
| 7,901.00                    | 0.70               | 219.70         | 7,893.78                    | 175.81          | 40.09           | -175.81                       | 0.11                          | -0.11                        | 1.89                        |
| 7,996.00                    | 0.80               | 217.10         | 7,988.77                    | 174.83          | 39.32           | -174.83                       | 0.11                          | 0.11                         | -2.74                       |
| 8,091.00                    | 0.10               | 138.00         | 8,083.76                    | 174.24          | 38.98           | -174.24                       | 0.83                          | -0.74                        | -83.26                      |
| 8,186.00                    | 0.40               | 225.50         | 8,178.76                    | 173.95          | 38.79           | -173.95                       | 0.43                          | 0.32                         | 92.11                       |
| 8,282.00                    | 0.40               | 219.50         | 8,274.76                    | 173.45          | 38.34           | -173.45                       | 0.04                          | 0.00                         | -6.25                       |
| 8,377.00                    | 0.40               | 7.30           | 8,369.76                    | 173.53          | 38.17           | -173.53                       | 0.81                          | 0.00                         | 155.58                      |
| 8,473.00                    | 0.30               | 69.80          | 8,465.76                    | 173.95          | 38.45           | -173.95                       | 0.39                          | -0.10                        | 65.10                       |
| 8,569.00                    | 0.40               | 155.70         | 8,561.76                    | 173.73          | 38.83           | -173.73                       | 0.50                          | 0.10                         | 89.48                       |
| 8,664.00                    | 0.60               | 189.60         | 8,656.75                    | 172.94          | 38.88           | -172.94                       | 0.37                          | 0.21                         | 35.68                       |
| 8,760.00                    | 0.30               | 63.10          | 8,752.75                    | 172.55          | 39.02           | -172.55                       | 0.85                          | -0.31                        | -131.77                     |
| 8,855.00                    | 1.00               | 37.80          | 8,847.75                    | 173.32          | 39.75           | -173.32                       | 0.78                          | 0.74                         | -26.63                      |
| 8,950.00                    | 1.10               | 39.50          | 8,942.73                    | 174.68          | 40.84           | -174.68                       | 0.11                          | 0.11                         | 1.79                        |
| 9,046.00                    | 1.00               | 47.80          | 9,038.71                    | 175.95          | 42.04           | -175.95                       | 0.19                          | -0.10                        | 8.65                        |
| 9,142.00                    | 0.70               | 53.40          | 9,134.70                    | 176.87          | 43.14           | -176.87                       | 0.32                          | -0.31                        | 5.83                        |

# LEAM Drilling Services

## Survey Report

Company: Devon Energy  
Project: Lea County, NM (NAD-83)  
Site: Thistle Unit Sec 22-27 Trac Pad  
Well: Thistle Unit 86H  
Wellbore: OH  
Design: OH

Local Co-ordinate Reference: Well Thistle Unit 86H  
TVD Reference: 3710.4' GE + 23.5' KB @ 3733.90usft  
MD Reference: 3710.4' GE + 23.5' KB @ 3733.90usft  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
Database: 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) |
|-----------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|
| 9,237.00                    | 0.40               | 56.20          | 9,229.70                    | 177.40          | 43.88           | -177.40                       | 0.32                          | -0.32                        | 2.95                        |
| 9,332.00                    | 0.20               | 137.80         | 9,324.70                    | 177.46          | 44.26           | -177.46                       | 0.44                          | -0.21                        | 85.89                       |
| 9,428.00                    | 0.40               | 198.80         | 9,420.70                    | 177.02          | 44.27           | -177.02                       | 0.36                          | 0.21                         | 63.54                       |
| 9,523.00                    | 0.50               | 212.00         | 9,515.69                    | 176.35          | 43.94           | -176.35                       | 0.15                          | 0.11                         | 13.89                       |
| 9,618.00                    | 0.10               | 159.90         | 9,610.69                    | 175.92          | 43.75           | -175.92                       | 0.47                          | -0.42                        | -54.84                      |
| 9,713.00                    | 0.50               | 229.40         | 9,705.69                    | 175.57          | 43.46           | -175.57                       | 0.50                          | 0.42                         | 73.16                       |
| 9,808.00                    | 1.00               | 239.70         | 9,800.68                    | 174.89          | 42.43           | -174.89                       | 0.54                          | 0.53                         | 10.84                       |
| 9,904.00                    | 1.00               | 230.40         | 9,896.67                    | 173.93          | 41.07           | -173.93                       | 0.17                          | 0.00                         | -9.69                       |
| 9,951.00                    | 1.10               | 223.70         | 9,943.66                    | 173.34          | 40.44           | -173.34                       | 0.34                          | 0.21                         | -14.26                      |
| 10,002.00                   | 1.40               | 194.60         | 9,994.65                    | 172.38          | 39.94           | -172.38                       | 1.36                          | 0.59                         | -57.06                      |
| 10,050.00                   | 7.60               | 161.10         | 10,042.48                   | 168.81          | 40.82           | -168.81                       | 13.50                         | 12.92                        | -69.79                      |
| 10,097.00                   | 14.40              | 159.80         | 10,088.59                   | 160.38          | 43.85           | -160.38                       | 14.48                         | 14.47                        | -2.77                       |
| 10,145.00                   | 21.10              | 160.50         | 10,134.28                   | 146.61          | 48.80           | -146.61                       | 13.97                         | 13.96                        | 1.46                        |
| 10,193.00                   | 25.80              | 165.40         | 10,178.31                   | 128.35          | 54.32           | -128.35                       | 10.59                         | 9.79                         | 10.21                       |
| 10,241.00                   | 30.90              | 168.30         | 10,220.54                   | 106.16          | 59.46           | -106.16                       | 11.00                         | 10.63                        | 6.04                        |
| 10,288.00                   | 35.90              | 172.40         | 10,259.77                   | 80.66           | 63.73           | -80.66                        | 11.67                         | 10.64                        | 8.72                        |
| 10,336.00                   | 40.30              | 175.00         | 10,297.54                   | 51.23           | 66.95           | -51.23                        | 9.76                          | 9.17                         | 5.42                        |
| 10,384.00                   | 44.50              | 175.90         | 10,332.97                   | 18.97           | 69.50           | -18.97                        | 8.84                          | 8.75                         | 1.88                        |
| 10,432.00                   | 47.80              | 176.60         | 10,366.22                   | -15.56          | 71.76           | 15.56                         | 6.95                          | 6.88                         | 1.46                        |
| 10,480.00                   | 49.90              | 179.40         | 10,397.81                   | -51.68          | 73.01           | 51.68                         | 6.20                          | 4.38                         | 5.83                        |
| 10,528.00                   | 52.60              | 181.50         | 10,427.85                   | -89.10          | 72.70           | 89.10                         | 6.58                          | 5.63                         | 4.38                        |
| 10,575.00                   | 56.10              | 185.60         | 10,455.25                   | -127.20         | 70.31           | 127.20                        | 10.28                         | 7.45                         | 8.72                        |
| 10,623.00                   | 61.30              | 185.20         | 10,480.18                   | -168.02         | 66.45           | 168.02                        | 10.86                         | 10.83                        | -0.83                       |
| 10,670.00                   | 65.10              | 181.90         | 10,501.37                   | -209.87         | 63.88           | 209.87                        | 10.23                         | 8.09                         | -7.02                       |
| 10,718.00                   | 67.90              | 179.80         | 10,520.51                   | -253.88         | 63.23           | 253.88                        | 7.08                          | 5.83                         | -4.38                       |
| 10,765.00                   | 72.80              | 177.90         | 10,536.27                   | -298.13         | 64.13           | 298.13                        | 11.30                         | 10.64                        | -4.04                       |
| 10,813.00                   | 77.60              | 178.10         | 10,548.49                   | -344.51         | 65.75           | 344.51                        | 9.80                          | 9.79                         | 0.42                        |
| 10,861.00                   | 82.40              | 178.00         | 10,556.82                   | -391.74         | 67.36           | 391.74                        | 10.00                         | 10.00                        | -0.21                       |
| 10,884.00                   | 84.20              | 177.20         | 10,559.51                   | -414.56         | 68.32           | 414.56                        | 8.55                          | 7.83                         | -3.48                       |
| 10,932.00                   | 87.80              | 178.90         | 10,562.85                   | -462.41         | 69.94           | 462.41                        | 8.29                          | 7.50                         | 3.54                        |
| 10,979.00                   | 88.20              | 179.60         | 10,564.49                   | -509.37         | 70.56           | 509.37                        | 1.71                          | 0.85                         | 1.49                        |
| 11,074.00                   | 87.60              | 182.80         | 10,567.98                   | -604.28         | 68.57           | 604.28                        | 3.42                          | -0.63                        | 3.37                        |
| 11,170.00                   | 86.50              | 182.60         | 10,572.92                   | -700.04         | 64.06           | 700.04                        | 1.16                          | -1.15                        | -0.21                       |
| 11,265.00                   | 88.20              | 181.90         | 10,577.31                   | -794.86         | 60.33           | 794.86                        | 1.93                          | 1.79                         | -0.74                       |
| 11,361.00                   | 88.10              | 181.90         | 10,580.41                   | -890.76         | 57.15           | 890.76                        | 0.10                          | -0.10                        | 0.00                        |
| 11,456.00                   | 89.20              | 181.70         | 10,582.65                   | -985.68         | 54.17           | 985.68                        | 1.18                          | 1.16                         | -0.21                       |
| 11,552.00                   | 88.90              | 182.40         | 10,584.24                   | -1,081.61       | 50.73           | 1,081.61                      | 0.79                          | -0.31                        | 0.73                        |
| 11,648.00                   | 88.60              | 181.00         | 10,586.33                   | -1,177.54       | 47.89           | 1,177.54                      | 1.49                          | -0.31                        | -1.48                       |
| 11,742.00                   | 89.40              | 178.70         | 10,587.97                   | -1,271.52       | 48.13           | 1,271.52                      | 2.59                          | 0.85                         | -2.45                       |
| 11,838.00                   | 89.50              | 178.20         | 10,588.89                   | -1,367.48       | 50.73           | 1,367.48                      | 0.53                          | 0.10                         | -0.52                       |
| 11,933.00                   | 89.80              | 178.40         | 10,589.47                   | -1,462.44       | 53.55           | 1,462.44                      | 0.38                          | 0.32                         | 0.21                        |
| 12,029.00                   | 91.50              | 180.10         | 10,588.39                   | -1,558.41       | 54.80           | 1,558.41                      | 2.50                          | 1.77                         | 1.77                        |
| 12,125.00                   | 87.90              | 179.30         | 10,588.89                   | -1,654.39       | 55.31           | 1,654.39                      | 3.84                          | -3.75                        | -0.83                       |
| 12,220.00                   | 88.60              | 180.00         | 10,591.79                   | -1,749.35       | 55.89           | 1,749.35                      | 1.04                          | 0.74                         | 0.74                        |

# LEAM Drilling Services

## Survey Report

Company: Devon Energy  
Project: Lea County, NM (NAD-83)  
Site: Thistle Unit Sec 22-27 Trac Pad  
Well: Thistle Unit 86H  
Wellbore: OH  
Design: OH

Local Co-ordinate Reference: Well Thistle Unit 86H  
TVD Reference: 3710.4' GE + 23.5' KB @ 3733.90usft  
MD Reference: 3710.4' GE + 23.5' KB @ 3733.90usft  
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) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 12,316.00             | 89.70           | 179.80      | 10,593.21             | -1,845.34    | 56.05        | 1,845.34                | 1.16                    | 1.15                   | -0.21                 |
| 12,411.00             | 90.30           | 180.30      | 10,593.21             | -1,940.33    | 55.97        | 1,940.33                | 0.82                    | 0.63                   | 0.53                  |
| 12,507.00             | 91.10           | 180.50      | 10,592.04             | -2,036.32    | 55.30        | 2,036.32                | 0.86                    | 0.83                   | 0.21                  |
| 12,603.00             | 90.00           | 179.40      | 10,591.12             | -2,132.32    | 55.38        | 2,132.32                | 1.62                    | -1.15                  | -1.15                 |
| 12,698.00             | 88.70           | 177.30      | 10,592.20             | -2,227.26    | 58.12        | 2,227.26                | 2.60                    | -1.37                  | -2.21                 |
| 12,794.00             | 86.80           | 174.90      | 10,595.97             | -2,322.96    | 64.64        | 2,322.96                | 3.19                    | -1.98                  | -2.50                 |
| 12,889.00             | 87.50           | 174.20      | 10,600.69             | -2,417.41    | 73.65        | 2,417.41                | 1.04                    | 0.74                   | -0.74                 |
| 12,985.00             | 90.40           | 174.00      | 10,602.45             | -2,512.87    | 83.52        | 2,512.87                | 3.03                    | 3.02                   | -0.21                 |
| 13,080.00             | 92.20           | 176.30      | 10,600.29             | -2,607.50    | 91.55        | 2,607.50                | 3.07                    | 1.89                   | 2.42                  |
| 13,176.00             | 91.20           | 177.90      | 10,597.45             | -2,703.33    | 96.40        | 2,703.33                | 1.96                    | -1.04                  | 1.67                  |
| 13,271.00             | 92.30           | 180.50      | 10,594.54             | -2,798.27    | 97.73        | 2,798.27                | 2.97                    | 1.16                   | 2.74                  |
| 13,366.00             | 91.80           | 182.40      | 10,591.15             | -2,893.17    | 95.33        | 2,893.17                | 2.07                    | -0.53                  | 2.00                  |
| 13,462.00             | 90.30           | 182.30      | 10,589.39             | -2,989.07    | 91.39        | 2,989.07                | 1.57                    | -1.56                  | -0.10                 |
| 13,558.00             | 89.40           | 182.80      | 10,589.64             | -3,084.97    | 87.12        | 3,084.97                | 1.07                    | -0.94                  | 0.52                  |
| 13,653.00             | 87.90           | 181.70      | 10,591.88             | -3,179.87    | 83.39        | 3,179.87                | 1.96                    | -1.58                  | -1.16                 |
| 13,749.00             | 88.00           | 180.00      | 10,595.31             | -3,275.80    | 81.97        | 3,275.80                | 1.77                    | 0.10                   | -1.77                 |
| 13,845.00             | 87.40           | 180.10      | 10,599.16             | -3,371.72    | 81.88        | 3,371.72                | 0.63                    | -0.63                  | 0.10                  |
| 13,940.00             | 86.80           | 179.60      | 10,603.97             | -3,466.59    | 82.13        | 3,466.59                | 0.82                    | -0.63                  | -0.53                 |
| 14,036.00             | 88.70           | 179.80      | 10,607.74             | -3,562.51    | 82.63        | 3,562.51                | 1.99                    | 1.98                   | 0.21                  |
| 14,131.00             | 91.40           | 181.20      | 10,607.65             | -3,657.50    | 81.81        | 3,657.50                | 3.20                    | 2.84                   | 1.47                  |
| 14,226.00             | 89.70           | 181.90      | 10,606.74             | -3,752.46    | 79.24        | 3,752.46                | 1.94                    | -1.79                  | 0.74                  |
| 14,322.00             | 90.30           | 182.40      | 10,606.74             | -3,848.39    | 75.63        | 3,848.39                | 0.81                    | 0.63                   | 0.52                  |
| 14,417.00             | 90.20           | 180.80      | 10,606.33             | -3,943.35    | 72.98        | 3,943.35                | 1.69                    | -0.11                  | -1.68                 |
| 14,513.00             | 88.90           | 180.30      | 10,607.08             | -4,039.34    | 72.06        | 4,039.34                | 1.45                    | -1.35                  | -0.52                 |
| 14,608.00             | 89.30           | 180.80      | 10,608.57             | -4,134.32    | 71.15        | 4,134.32                | 0.67                    | 0.42                   | 0.53                  |
| 14,703.00             | 90.00           | 180.80      | 10,609.15             | -4,229.31    | 69.82        | 4,229.31                | 0.74                    | 0.74                   | 0.00                  |
| 14,798.00             | 90.30           | 180.00      | 10,608.91             | -4,324.31    | 69.16        | 4,324.31                | 0.90                    | 0.32                   | -0.84                 |
| 14,893.00             | 89.50           | 179.10      | 10,609.07             | -4,419.30    | 69.91        | 4,419.30                | 1.27                    | -0.84                  | -0.95                 |
| 14,988.00             | 89.30           | 178.40      | 10,610.07             | -4,514.27    | 71.98        | 4,514.27                | 0.77                    | -0.21                  | -0.74                 |
| 15,083.00             | 87.20           | 177.50      | 10,612.97             | -4,609.16    | 75.37        | 4,609.16                | 2.40                    | -2.21                  | -0.95                 |
| 15,179.00             | 86.70           | 177.20      | 10,618.08             | -4,704.92    | 79.81        | 4,704.92                | 0.81                    | -0.52                  | -0.31                 |
| 15,275.00             | 88.80           | 178.60      | 10,622.01             | -4,800.77    | 83.32        | 4,800.77                | 2.46                    | 1.98                   | 1.46                  |
| 15,369.00             | 89.30           | 178.40      | 10,623.73             | -4,894.72    | 85.78        | 4,894.72                | 0.77                    | 0.74                   | -0.21                 |
| 15,463.00             | 89.40           | 178.00      | 10,624.80             | -4,988.67    | 88.73        | 4,988.67                | 0.44                    | 0.11                   | -0.43                 |
| 15,558.00             | 90.10           | 178.40      | 10,625.22             | -5,083.62    | 91.72        | 5,083.62                | 0.85                    | 0.74                   | 0.42                  |
| 15,652.00             | 90.00           | 178.00      | 10,625.13             | -5,177.57    | 94.67        | 5,177.57                | 0.44                    | -0.11                  | -0.43                 |
| 15,748.00             | 88.50           | 177.90      | 10,626.39             | -5,273.50    | 98.10        | 5,273.50                | 1.57                    | -1.56                  | -0.10                 |
| 15,843.00             | 88.40           | 179.10      | 10,628.96             | -5,368.43    | 100.59       | 5,368.43                | 1.27                    | -0.11                  | 1.26                  |
| 15,938.00             | 88.90           | 178.60      | 10,631.20             | -5,463.39    | 102.49       | 5,463.39                | 0.74                    | 0.53                   | -0.53                 |
| 16,034.00             | 88.90           | 180.00      | 10,633.04             | -5,559.36    | 103.67       | 5,559.36                | 1.46                    | 0.00                   | 1.46                  |
| 16,129.00             | 88.40           | 179.30      | 10,635.28             | -5,654.33    | 104.25       | 5,654.33                | 0.91                    | -0.53                  | -0.74                 |
| 16,225.00             | 90.10           | 179.60      | 10,636.54             | -5,750.31    | 105.17       | 5,750.31                | 1.80                    | 1.77                   | 0.31                  |
| 16,320.00             | 90.00           | 181.00      | 10,636.45             | -5,845.31    | 104.67       | 5,845.31                | 1.48                    | -0.11                  | 1.47                  |

# LEAM Drilling Services

## Survey Report

Company: Devon Energy  
 Project: Lea County, NM (NAD-83)  
 Site: Thistle Unit Sec 22-27 Trac Pad  
 Well: Thistle Unit 86H  
 Wellbore: OH  
 Design: OH

Local Co-ordinate Reference: Well Thistle Unit 86H  
 TVD Reference: 3710.4' GE + 23.5' KB @ 3733.90usft  
 MD Reference: 3710.4' GE + 23.5' KB @ 3733.90usft  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature  
 Database: 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) |
|-----------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|
| 16,416.00                   | 91.00              | 181.90         | 10,635.62                   | -5,941.27       | 102.24          | 5,941.27                      | 1.40                          | 1.04                         | 0.94                        |
| 16,511.00                   | 90.90              | 180.70         | 10,634.04                   | -6,036.23       | 100.09          | 6,036.23                      | 1.27                          | -0.11                        | -1.26                       |
| 16,607.00                   | 89.50              | 180.00         | 10,633.70                   | -6,132.23       | 99.50           | 6,132.23                      | 1.63                          | -1.46                        | -0.73                       |
| 16,702.00                   | 90.00              | 180.00         | 10,634.12                   | -6,227.23       | 99.50           | 6,227.23                      | 0.53                          | 0.53                         | 0.00                        |
| 16,798.00                   | 89.30              | 179.60         | 10,634.71                   | -6,323.22       | 99.84           | 6,323.22                      | 0.84                          | -0.73                        | -0.42                       |
| 16,893.00                   | 89.50              | 178.40         | 10,635.70                   | -6,418.20       | 101.49          | 6,418.20                      | 1.28                          | 0.21                         | -1.26                       |
| 16,989.00                   | 90.30              | 180.30         | 10,635.87                   | -6,514.19       | 102.58          | 6,514.19                      | 2.15                          | 0.83                         | 1.98                        |
| 17,085.00                   | 92.80              | 181.40         | 10,633.27                   | -6,610.14       | 101.16          | 6,610.14                      | 2.84                          | 2.60                         | 1.15                        |
| 17,133.00                   | 92.90              | 181.20         | 10,630.89                   | -6,658.07       | 100.07          | 6,658.07                      | 0.47                          | 0.21                         | -0.42                       |
| 17,180.00                   | 91.30              | 180.80         | 10,629.16                   | -6,705.02       | 99.25           | 6,705.02                      | 3.51                          | -3.40                        | -0.85                       |
| 17,228.00                   | 90.30              | 180.50         | 10,628.49                   | -6,753.02       | 98.71           | 6,753.02                      | 2.18                          | -2.08                        | -0.63                       |
| 17,276.00                   | 88.90              | 180.30         | 10,628.83                   | -6,801.01       | 98.37           | 6,801.01                      | 2.95                          | -2.92                        | -0.42                       |
| 17,324.00                   | 87.80              | 179.80         | 10,630.21                   | -6,848.99       | 98.33           | 6,848.99                      | 2.52                          | -2.29                        | -1.04                       |
| 17,371.00                   | 88.40              | 179.80         | 10,631.77                   | -6,895.97       | 98.49           | 6,895.97                      | 1.28                          | 1.28                         | 0.00                        |
| 17,419.00                   | 88.90              | 179.80         | 10,632.90                   | -6,943.95       | 98.66           | 6,943.95                      | 1.04                          | 1.04                         | 0.00                        |
| 17,467.00                   | 87.10              | 180.00         | 10,634.57                   | -6,991.92       | 98.75           | 6,991.92                      | 3.77                          | -3.75                        | 0.42                        |
| 17,514.00                   | 86.10              | 179.30         | 10,637.36                   | -7,038.84       | 99.03           | 7,038.84                      | 2.60                          | -2.13                        | -1.49                       |
| 17,562.00                   | 87.30              | 179.60         | 10,640.12                   | -7,086.75       | 99.49           | 7,086.75                      | 2.58                          | 2.50                         | 0.63                        |
| 17,610.00                   | 89.30              | 180.00         | 10,641.55                   | -7,134.73       | 99.66           | 7,134.73                      | 4.25                          | 4.17                         | 0.83                        |
| 17,657.00                   | 90.00              | 179.80         | 10,641.84                   | -7,181.73       | 99.74           | 7,181.73                      | 1.55                          | 1.49                         | -0.43                       |
| 17,704.00                   | 90.40              | 179.60         | 10,641.67                   | -7,228.73       | 99.99           | 7,228.73                      | 0.95                          | 0.85                         | -0.43                       |
| 17,751.00                   | 91.20              | 179.60         | 10,641.02                   | -7,275.72       | 100.32          | 7,275.72                      | 1.70                          | 1.70                         | 0.00                        |
| 17,846.00                   | 87.60              | 179.40         | 10,642.01                   | -7,370.70       | 101.14          | 7,370.70                      | 3.80                          | -3.79                        | -0.21                       |
| 17,941.00                   | 88.50              | 179.60         | 10,645.24                   | -7,465.64       | 101.97          | 7,465.64                      | 0.97                          | 0.95                         | 0.21                        |
| 18,008.00                   | 88.50              | 179.40         | 10,647.00                   | -7,532.61       | 102.56          | 7,532.61                      | 0.30                          | 0.00                         | -0.30                       |
| 18,067.00                   | 88.50              | 179.40         | 10,648.54                   | -7,591.59       | 103.18          | 7,591.59                      | 0.00                          | 0.00                         | 0.00                        |

Projection