



NM OIL CONSERVATION  
ARTESIA DISTRICT

JUN 07 2018

RECEIVED

September 29, 2017

Devon Energy Corporation  
20 N. Broadway  
Oklahoma City, Oklahoma 73102

Attn: Ian Norwalk

30.015.44098  
44098

Re: Final Directional Report  
Onyx PWU 29-28 9H  
Eddy County, NM

Mr. Norwalk,

Included in this report are a directional comparison plot and final survey report, daily directional drilling reports, and final BHA reports.

The report covers the following:

LEAM Job #: MD-170699 for the (OH) from September 05, 2017 to September 19, 2017;  
Drilling start depth of 248' MD to 18,909' total MD.

We appreciate you giving LEAM Drilling Services the opportunity of doing business with you and look forward to working with you in the future.

Regards,

Nora Tucker  
Well Planner - Manager

**LEAM Drilling Services**



## **Final Directional Report**

**Devon Energy**

**Onyx PWU 29-28 9H**

30-015 ~~44078~~  
44098

**Eddy County, NM**

**Prepared for Ian Norwalk**



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**SECTION 1**

**PROPOSED VS. ACTUAL PLOT**

# Devon Energy

Project: Eddy County, NM (NAD-83)  
 Site: Onyx PWU 29-28  
 Well: 9H  
 Wellbore: OH  
 Design: OH

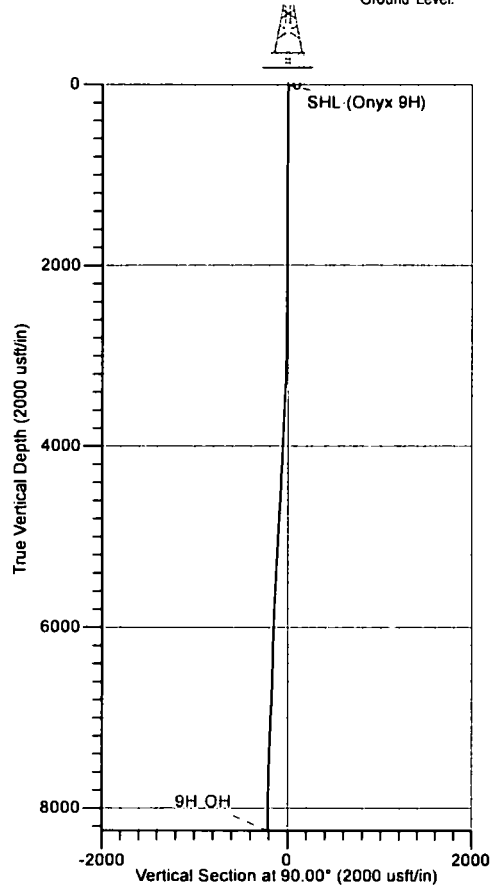
3313.4' GE + 23.5' KB @ 3336.90usft  
 Ground Level: 3313.40



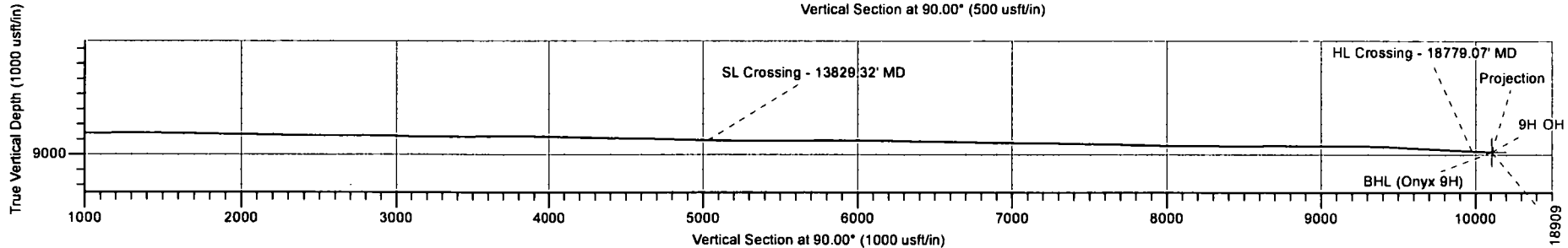
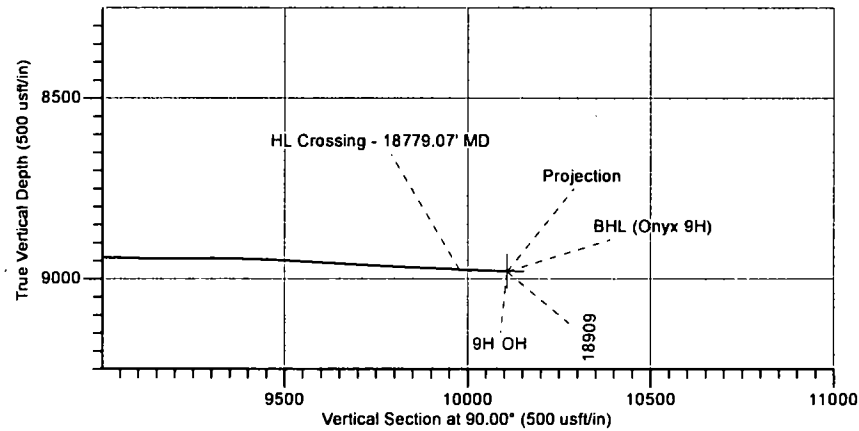
Azimuths to Grid North  
 True North: -0.12°  
 Magnetic North: 7.34°  
 Magnetic Field  
 Strength: 48234.1nT  
 Dip Angle: 60.52°  
 Date: 3/1/2017  
 Model: HDGM

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    | Latitude          | Longitude         |  |
| BHL (Onyx 9H)         | 8980.19 | -386.80 | 10107.84 | 32° 38' 16.6422 N | 104° 4' 18.8592 W |  |
| SHL (Onyx 9H)         | 0.00    | 0.00    | 0.00     | 32° 38' 20.7014 N | 104° 6' 17.0602 W |  |



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

Design: OH (9H/OH)  
 Onyx PWU 29-28  
 Created By: Dustin Ault  
 Date: 14/57, September 28 2017  
 Approved: \_\_\_\_\_  
 Date: \_\_\_\_\_

# Devon Energy

Project: Eddy County, NM (NAD-83)  
 Site: Onyx PWU 29-28  
 Well: 9H  
 Wellbore: OH  
 Design: OH



Azimuths to Grid North  
 True North: -0.12°  
 Magnetic North: 7.34°  
 Magnetic Field  
 Strength: 48234.1snT  
 Dip Angle: 60.52°  
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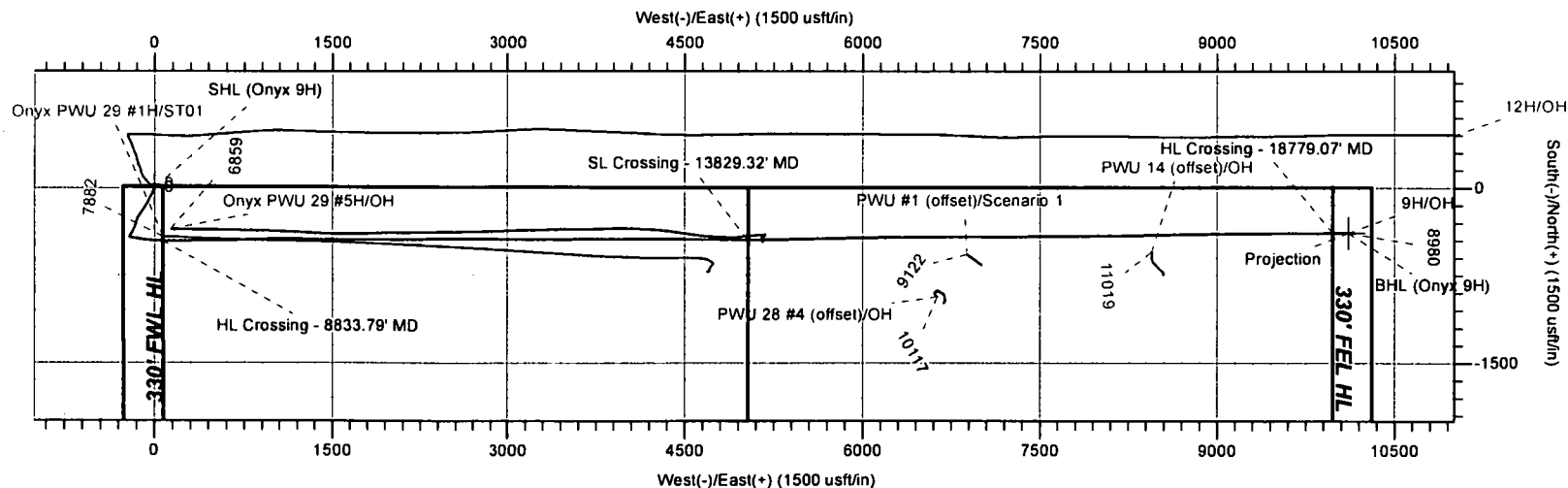
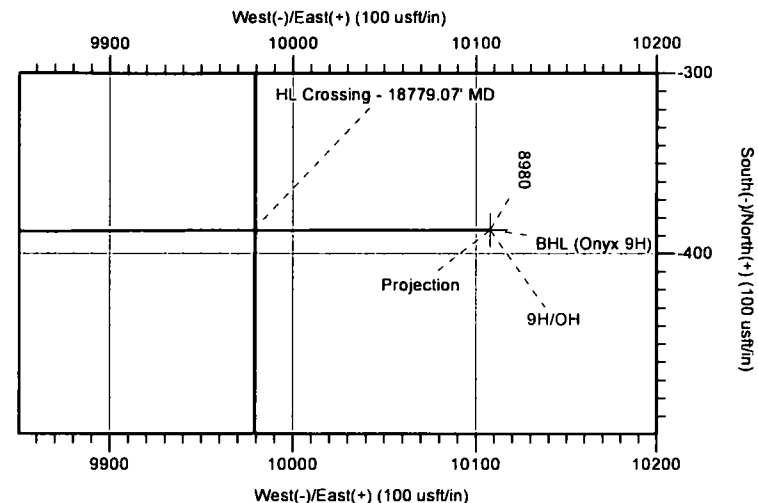


## DESIGN TARGET DETAILS

| Name          | TVD     | +N/-S   | +E/-W    | Northing  | Easting   | Latitude          | Longitude         |
|---------------|---------|---------|----------|-----------|-----------|-------------------|-------------------|
| BHL (Onyx 9H) | 8980.19 | -386.90 | 10107.84 | 595918.36 | 621811.04 | 32° 38' 16.6422 N | 104° 4' 18.8592 W |
| SHL (Onyx 9H) | 0.00    | 0.00    | 0.00     | 596305.26 | 611703.20 | 32° 38' 20.7014 N | 104° 6' 17.0602 W |

## ACTUAL LINE CALLS

SHL: 15' FNL, 265' FWL of Sec 29  
 BHL: 387' FNL, 196' FEL of Sec 28



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

Design: OH (9H/OH)  
 Onyx PWU 29-28  
 Created By: Dustin Ault  
 Date: \_\_\_\_\_  
 Approved: \_\_\_\_\_  
 Date: 14:52, September 28 2017

# **Devon Energy**

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

**Onyx PWU 29-28**

**9H**

**OH**

**Design: OH**

## **Standard Survey Report**

**28 September, 2017**

# LEAM Drilling Systems LLC

## Survey Report

|                  |                          |                                     |                                     |
|------------------|--------------------------|-------------------------------------|-------------------------------------|
| <b>Company:</b>  | Devon Energy             | <b>Local Co-ordinate Reference:</b> | Well 9H                             |
| <b>Project:</b>  | Eddy County, NM (NAD-83) | <b>TVD Reference:</b>               | 3313.4' GE + 23.5' KB @ 3336.90usft |
| <b>Site:</b>     | Onyx PWU 29-28           | <b>MD Reference:</b>                | 3313.4' GE + 23.5' KB @ 3336.90usft |
| <b>Well:</b>     | 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>                  | Onyx PWU 29-28 |                     |                 |                          |                   |
| <b>Site Position:</b>        |                | <b>Northing:</b>    | 596,305.26 usft | <b>Latitude:</b>         | 32° 38' 20.7014 N |
| <b>From:</b>                 | Map            | <b>Easting:</b>     | 611,703.20 usft | <b>Longitude:</b>        | 104° 6' 17.0602 W |
| <b>Position Uncertainty:</b> | 0.00 usft      | <b>Slot Radius:</b> | 13-3/16 "       | <b>Grid Convergence:</b> | 0.12 °            |

|                             |              |                            |                  |                      |                   |                   |
|-----------------------------|--------------|----------------------------|------------------|----------------------|-------------------|-------------------|
| <b>Well</b>                 | 9H           |                            |                  |                      |                   |                   |
| <b>Well Position</b>        | <b>+N/-S</b> | 0.00 usft                  | <b>Northing:</b> | 596,305.26 usft      | <b>Latitude:</b>  | 32° 38' 20.7014 N |
|                             | <b>+E/-W</b> | 0.00 usft                  | <b>Easting:</b>  | 611,703.20 usft      | <b>Longitude:</b> | 104° 6' 17.0602 W |
| <b>Position Uncertainty</b> | 0.00 usft    | <b>Wellhead Elevation:</b> | 0.00 usft        | <b>Ground Level:</b> | 3,313.40 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              | 3/1/2017           | 7.47                   | 60.52                | 48,234                     |

|                          |                                |                     |                     |                      |      |
|--------------------------|--------------------------------|---------------------|---------------------|----------------------|------|
| <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                | 90.00                |      |

|                       |                  |                          |                  |                                    |
|-----------------------|------------------|--------------------------|------------------|------------------------------------|
| <b>Survey Program</b> | <b>Date</b>      | 9/28/2017                |                  |                                    |
| <b>From (usft)</b>    | <b>To (usft)</b> | <b>Survey (Wellbore)</b> | <b>Tool Name</b> | <b>Description</b>                 |
| 25.00                 | 139.00           | Survey #1 (OH)           | ISCWSA-GYRO-3    | Gyroflex Explorer(corrected acsfe) |
| 248.00                | 18,777.00        | Survey #2 (OH)           | LEAM MWD+HDGM    | MWD+HDGM                           |
| 18,909.00             | 18,909.00        | 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                         |
| <b>SHL (O PWU 29-28 9H) - SHL (Onyx 9H)</b> |                        |                    |                              |                     |                     |                                |                                |                               |                              |
| 3.88                                        | 0.02                   | 40.43              | 3.88                         | 0.00                | 0.00                | 0.00                           | 0.44                           | 0.44                          | 0.00                         |
| <b>PWU #1 (350' Radius)</b>                 |                        |                    |                              |                     |                     |                                |                                |                               |                              |
| 25.00                                       | 0.11                   | 40.43              | 25.00                        | 0.02                | 0.02                | 0.02                           | 0.44                           | 0.44                          | 0.00                         |
| 50.00                                       | 0.11                   | 25.13              | 50.00                        | 0.06                | 0.04                | 0.04                           | 0.12                           | 0.00                          | -61.20                       |
| 75.00                                       | 0.05                   | 235.52             | 75.00                        | 0.07                | 0.04                | 0.04                           | 0.62                           | -0.24                         | -598.44                      |
| 100.00                                      | 0.21                   | 204.71             | 100.00                       | 0.03                | 0.01                | 0.01                           | 0.68                           | 0.64                          | -123.24                      |

# LEAM Drilling Systems LLC

## Survey Report

Company: Devon Energy  
Project: Eddy County, NM (NAD-83)  
Site: Onyx PWU 29-28  
Well: 9H  
Wellbore: OH  
Design: OH

Local Co-ordinate Reference: Well 9H  
TVD Reference: 3313.4' GE + 23.5' KB @ 3336.90usft  
MD Reference: 3313.4' GE + 23.5' KB @ 3336.90usft  
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) |
|-----------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|
| 125.00                      | 0.34               | 229.55         | 125.00                      | -0.06           | -0.06           | -0.06                         | 0.69                          | 0.52                         | 99.36                       |
| 139.00                      | 0.36               | 229.49         | 139.00                      | -0.12           | -0.13           | -0.13                         | 0.14                          | 0.14                         | -0.43                       |
| 248.00                      | 1.40               | 209.00         | 247.99                      | -1.51           | -1.03           | -1.03                         | 0.98                          | 0.95                         | -18.80                      |
| 338.00                      | 1.40               | 200.00         | 337.96                      | -3.50           | -1.94           | -1.94                         | 0.24                          | 0.00                         | -10.00                      |
| 437.00                      | 1.10               | 198.90         | 436.93                      | -5.54           | -2.66           | -2.66                         | 0.30                          | -0.30                        | -1.11                       |
| 528.00                      | 1.30               | 213.00         | 527.91                      | -7.23           | -3.51           | -3.51                         | 0.39                          | 0.22                         | 15.49                       |
| 619.00                      | 1.10               | 197.70         | 618.90                      | -8.93           | -4.34           | -4.34                         | 0.41                          | -0.22                        | -16.81                      |
| 711.00                      | 1.10               | 206.10         | 710.88                      | -10.56          | -4.99           | -4.99                         | 0.18                          | 0.00                         | 9.13                        |
| 803.00                      | 1.10               | 175.70         | 802.86                      | -12.23          | -5.31           | -5.31                         | 0.63                          | 0.00                         | -33.04                      |
| 895.00                      | 1.10               | 177.30         | 894.85                      | -14.00          | -5.21           | -5.21                         | 0.03                          | 0.00                         | 1.74                        |
| 986.00                      | 0.70               | 195.10         | 985.83                      | -15.41          | -5.31           | -5.31                         | 0.53                          | -0.44                        | 19.56                       |
| 1,077.00                    | 0.50               | 171.20         | 1,076.83                    | -16.34          | -5.39           | -5.39                         | 0.35                          | -0.22                        | -26.26                      |
| 1,168.00                    | 0.70               | 193.10         | 1,167.82                    | -17.27          | -5.46           | -5.46                         | 0.33                          | 0.22                         | 24.07                       |
| 1,261.00                    | 0.30               | 149.00         | 1,260.82                    | -18.03          | -5.46           | -5.46                         | 0.57                          | -0.43                        | -47.42                      |
| 1,352.00                    | 0.40               | 149.70         | 1,351.82                    | -18.51          | -5.18           | -5.18                         | 0.11                          | 0.11                         | 0.77                        |
| 1,448.00                    | 0.20               | 110.30         | 1,447.82                    | -18.86          | -4.85           | -4.85                         | 0.29                          | -0.21                        | -41.04                      |
| 1,543.00                    | 0.10               | 354.50         | 1,542.82                    | -18.83          | -4.71           | -4.71                         | 0.27                          | -0.11                        | -121.89                     |
| 1,639.00                    | 0.40               | 261.70         | 1,638.82                    | -18.80          | -5.05           | -5.05                         | 0.43                          | 0.31                         | -96.67                      |
| 1,735.00                    | 0.40               | 261.70         | 1,734.81                    | -18.89          | -5.71           | -5.71                         | 0.00                          | 0.00                         | 0.00                        |
| 1,830.00                    | 0.40               | 204.40         | 1,829.81                    | -19.24          | -6.17           | -6.17                         | 0.40                          | 0.00                         | -60.32                      |
| 1,926.00                    | 0.30               | 348.20         | 1,925.81                    | -19.30          | -6.36           | -6.36                         | 0.69                          | -0.10                        | 149.79                      |
| 2,021.00                    | 0.40               | 304.20         | 2,020.81                    | -18.87          | -6.69           | -6.69                         | 0.29                          | 0.11                         | -46.32                      |
| 2,117.00                    | 0.40               | 299.00         | 2,116.81                    | -18.52          | -7.26           | -7.26                         | 0.04                          | 0.00                         | -5.42                       |
| 2,213.00                    | 0.20               | 223.70         | 2,212.81                    | -18.48          | -7.67           | -7.67                         | 0.42                          | -0.21                        | -78.44                      |
| 2,308.00                    | 0.50               | 293.30         | 2,307.81                    | -18.44          | -8.16           | -8.16                         | 0.49                          | 0.32                         | 73.26                       |
| 2,404.00                    | 0.30               | 311.60         | 2,403.80                    | -18.10          | -8.74           | -8.74                         | 0.24                          | -0.21                        | 19.06                       |
| 2,500.00                    | 0.40               | 312.30         | 2,499.80                    | -17.71          | -9.17           | -9.17                         | 0.10                          | 0.10                         | 0.73                        |
| 2,595.00                    | 0.70               | 248.00         | 2,594.80                    | -17.71          | -9.96           | -9.96                         | 0.67                          | 0.32                         | -67.68                      |
| 2,691.00                    | 1.10               | 217.80         | 2,690.79                    | -18.65          | -11.06          | -11.06                        | 0.63                          | 0.42                         | -31.46                      |
| 2,786.00                    | 1.50               | 193.80         | 2,785.76                    | -20.58          | -11.92          | -11.92                        | 0.70                          | 0.42                         | -25.26                      |
| 2,882.00                    | 2.30               | 195.30         | 2,881.71                    | -23.66          | -12.73          | -12.73                        | 0.83                          | 0.83                         | 1.56                        |
| 2,977.00                    | 2.90               | 196.50         | 2,976.61                    | -27.80          | -13.91          | -13.91                        | 0.63                          | 0.63                         | 1.26                        |
| 3,073.00                    | 3.70               | 198.90         | 3,072.45                    | -33.06          | -15.61          | -15.61                        | 0.85                          | 0.83                         | 2.50                        |
| 3,169.00                    | 4.60               | 205.30         | 3,168.20                    | -39.47          | -18.25          | -18.25                        | 1.05                          | 0.94                         | 6.67                        |
| 3,264.00                    | 5.10               | 202.30         | 3,262.86                    | -46.82          | -21.49          | -21.49                        | 0.59                          | 0.53                         | -3.16                       |
| 3,360.00                    | 5.80               | 207.00         | 3,358.42                    | -55.09          | -25.31          | -25.31                        | 0.86                          | 0.73                         | 4.90                        |
| 3,411.00                    | 6.00               | 207.60         | 3,409.15                    | -59.75          | -27.71          | -27.71                        | 0.41                          | 0.39                         | 1.18                        |
| 3,543.00                    | 5.40               | 211.40         | 3,540.50                    | -71.17          | -34.14          | -34.14                        | 0.54                          | -0.45                        | 2.88                        |
| 3,639.00                    | 5.00               | 211.40         | 3,636.11                    | -78.59          | -38.68          | -38.68                        | 0.42                          | -0.42                        | 0.00                        |
| 3,735.00                    | 5.60               | 212.50         | 3,731.69                    | -86.12          | -43.37          | -43.37                        | 0.63                          | 0.63                         | 1.15                        |
| 3,830.00                    | 5.10               | 211.20         | 3,826.28                    | -93.64          | -48.05          | -48.05                        | 0.54                          | -0.53                        | -1.37                       |
| 3,926.00                    | 5.30               | 198.80         | 3,921.89                    | -101.48         | -51.69          | -51.69                        | 1.19                          | 0.21                         | -12.92                      |
| 4,021.00                    | 6.50               | 194.20         | 4,016.38                    | -110.85         | -54.42          | -54.42                        | 1.36                          | 1.26                         | -4.84                       |
| 4,117.00                    | 6.60               | 205.80         | 4,111.76                    | -121.09         | -58.16          | -58.16                        | 1.38                          | 0.10                         | 12.08                       |

# LEAM Drilling Systems LLC

## Survey Report

Company: Devon Energy  
Project: Eddy County, NM (NAD-83)  
Site: Onyx PWU 29-28  
Well: 9H  
Wellbore: OH  
Design: OH

Local Co-ordinate Reference: Well 9H  
TVD Reference: 3313.4' GE + 23.5' KB @ 3336.90usft  
MD Reference: 3313.4' GE + 23.5' KB @ 3336.90usft  
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) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 4,212.00              | 5.40            | 208.40      | 4,206.24              | -129.93      | -62.66       | -62.66                  | 1.29                    | -1.26                  | 2.74                  |
| 4,307.00              | 5.80            | 219.70      | 4,300.79              | -137.56      | -67.85       | -67.85                  | 1.23                    | 0.42                   | 11.89                 |
| 4,403.00              | 4.20            | 226.00      | 4,396.42              | -143.73      | -73.48       | -73.48                  | 1.76                    | -1.67                  | 6.56                  |
| 4,498.00              | 4.20            | 209.70      | 4,491.17              | -149.17      | -77.71       | -77.71                  | 1.25                    | 0.00                   | -17.16                |
| 4,594.00              | 5.00            | 211.60      | 4,586.86              | -155.79      | -81.64       | -81.64                  | 0.85                    | 0.83                   | 1.98                  |
| 4,690.00              | 6.10            | 208.60      | 4,682.41              | -163.83      | -86.27       | -86.27                  | 1.18                    | 1.15                   | -3.13                 |
| 4,785.00              | 5.90            | 207.00      | 4,776.89              | -172.61      | -90.91       | -90.91                  | 0.27                    | -0.21                  | -1.68                 |
| 4,881.00              | 5.00            | 207.70      | 4,872.45              | -180.71      | -95.09       | -95.09                  | 0.94                    | -0.94                  | 0.73                  |
| 4,977.00              | 5.00            | 210.40      | 4,968.09              | -188.03      | -99.15       | -99.15                  | 0.25                    | 0.00                   | 2.81                  |
| 5,072.00              | 6.30            | 216.50      | 5,062.62              | -195.79      | -104.35      | -104.35                 | 1.51                    | 1.37                   | 6.42                  |
| 5,168.00              | 5.70            | 214.80      | 5,158.10              | -203.94      | -110.20      | -110.20                 | 0.65                    | -0.63                  | -1.77                 |
| 5,263.00              | 4.70            | 220.70      | 5,252.71              | -210.76      | -115.43      | -115.43                 | 1.19                    | -1.05                  | 6.21                  |
| 5,359.00              | 5.20            | 214.90      | 5,348.35              | -217.31      | -120.49      | -120.49                 | 0.74                    | 0.52                   | -6.04                 |
| 5,454.00              | 6.10            | 214.80      | 5,442.89              | -224.99      | -125.83      | -125.83                 | 0.95                    | 0.95                   | -0.11                 |
| 5,550.00              | 5.30            | 215.80      | 5,538.41              | -232.77      | -131.34      | -131.34                 | 0.84                    | -0.83                  | 1.04                  |
| 5,645.00              | 4.90            | 210.70      | 5,633.04              | -239.82      | -135.97      | -135.97                 | 0.64                    | -0.42                  | -5.37                 |
| 5,741.00              | 5.40            | 204.20      | 5,728.65              | -247.46      | -139.92      | -139.92                 | 0.80                    | 0.52                   | -6.77                 |
| 5,836.00              | 6.90            | 202.50      | 5,823.10              | -256.81      | -143.94      | -143.94                 | 1.59                    | 1.58                   | -1.79                 |
| 5,932.00              | 5.70            | 203.90      | 5,918.52              | -266.50      | -148.07      | -148.07                 | 1.26                    | -1.25                  | 1.46                  |
| 6,027.00              | 5.40            | 196.70      | 6,013.07              | -275.10      | -151.27      | -151.27                 | 0.80                    | -0.32                  | -7.58                 |
| 6,123.00              | 5.40            | 196.50      | 6,108.65              | -283.75      | -153.85      | -153.85                 | 0.02                    | 0.00                   | -0.21                 |
| 6,219.00              | 4.70            | 194.50      | 6,204.27              | -291.89      | -156.12      | -156.12                 | 0.75                    | -0.73                  | -2.08                 |
| 6,314.00              | 3.10            | 194.40      | 6,299.05              | -298.15      | -157.73      | -157.73                 | 1.68                    | -1.68                  | -0.11                 |
| 6,430.00              | 5.60            | 201.10      | 6,414.71              | -306.47      | -160.55      | -160.55                 | 2.20                    | 2.16                   | 5.78                  |
| 6,505.00              | 4.90            | 187.50      | 6,489.40              | -313.06      | -162.29      | -162.29                 | 1.90                    | -0.93                  | -18.13                |
| 6,601.00              | 5.90            | 197.40      | 6,584.97              | -321.83      | -164.30      | -164.30                 | 1.42                    | 1.04                   | 10.31                 |
| 6,696.00              | 6.20            | 205.10      | 6,679.44              | -331.14      | -167.93      | -167.93                 | 0.91                    | 0.32                   | 8.11                  |
| 6,791.00              | 5.40            | 200.00      | 6,773.96              | -339.98      | -171.64      | -171.64                 | 1.00                    | -0.84                  | -5.37                 |
| 6,887.00              | 5.50            | 200.20      | 6,869.52              | -348.55      | -174.77      | -174.77                 | 0.11                    | 0.10                   | 0.21                  |
| 6,982.00              | 6.40            | 203.70      | 6,964.01              | -357.67      | -178.47      | -178.47                 | 1.02                    | 0.95                   | 3.68                  |
| 7,078.00              | 6.00            | 204.00      | 7,059.45              | -367.15      | -182.66      | -182.66                 | 0.42                    | -0.42                  | 0.31                  |
| 7,173.00              | 4.90            | 204.00      | 7,154.02              | -375.39      | -186.33      | -186.33                 | 1.16                    | -1.16                  | 0.00                  |
| 7,268.00              | 4.50            | 208.60      | 7,248.70              | -382.37      | -189.77      | -189.77                 | 0.58                    | -0.42                  | 4.84                  |
| 7,364.00              | 4.40            | 213.40      | 7,344.41              | -388.75      | -193.60      | -193.60                 | 0.40                    | -0.10                  | 5.00                  |
| 7,460.00              | 4.60            | 214.20      | 7,440.11              | -395.01      | -197.79      | -197.79                 | 0.22                    | 0.21                   | 0.83                  |
| 7,555.00              | 4.70            | 212.10      | 7,534.80              | -401.46      | -202.00      | -202.00                 | 0.21                    | 0.11                   | -2.21                 |
| 7,650.00              | 3.40            | 207.00      | 7,629.56              | -407.27      | -205.35      | -205.35                 | 1.42                    | -1.37                  | -5.37                 |
| 7,746.00              | 2.70            | 199.30      | 7,725.43              | -411.94      | -207.38      | -207.38                 | 0.84                    | -0.73                  | -8.02                 |
| 7,841.00              | 2.30            | 189.30      | 7,820.34              | -415.93      | -208.43      | -208.43                 | 0.62                    | -0.42                  | -10.53                |
| 7,937.00              | 1.60            | 207.60      | 7,916.28              | -419.02      | -209.36      | -209.36                 | 0.97                    | -0.73                  | 19.06                 |
| 8,032.00              | 1.20            | 214.10      | 8,011.25              | -421.02      | -210.54      | -210.54                 | 0.45                    | -0.42                  | 6.84                  |
| 8,127.00              | 0.20            | 225.30      | 8,106.24              | -421.96      | -211.21      | -211.21                 | 1.06                    | -1.05                  | 11.79                 |
| 8,223.00              | 0.20            | 74.10       | 8,202.24              | -422.03      | -211.17      | -211.17                 | 0.40                    | 0.00                   | -157.50               |

# LEAM Drilling Systems LLC

## Survey Report

|           |                          |                              |                                     |
|-----------|--------------------------|------------------------------|-------------------------------------|
| Company:  | Devon Energy             | Local Co-ordinate Reference: | Well 9H                             |
| Project:  | Eddy County, NM (NAD-83) | TVD Reference:               | 3313.4' GE + 23.5' KB @ 3336.90usft |
| Site:     | Onyx PWU 29-28           | MD Reference:                | 3313.4' GE + 23.5' KB @ 3336.90usft |
| Well:     | 9H                       | North Reference:             | Grid                                |
| Wellbore: | OH                       | Survey Calculation Method:   | Minimum Curvature                   |
| Design:   | OH                       | 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) |
|-----------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|
| 8,261.00                    | 0.40               | 70.60          | 8,240.24                    | -421.97         | -210.98         | -210.98                       | 0.53                          | 0.53                         | -9.21                       |
| 8,362.00                    | 8.30               | 99.70          | 8,340.87                    | -423.08         | -203.45         | -203.45                       | 7.87                          | 7.82                         | 28.81                       |
| 8,410.00                    | 16.65              | 101.75         | 8,387.70                    | -425.07         | -193.29         | -193.29                       | 17.42                         | 17.40                        | 4.27                        |
| 8,458.00                    | 24.35              | 99.38          | 8,432.63                    | -428.09         | -176.76         | -176.76                       | 16.13                         | 16.04                        | -4.94                       |
| 8,506.00                    | 29.00              | 99.08          | 8,475.51                    | -431.54         | -155.50         | -155.50                       | 9.69                          | 9.69                         | -0.63                       |
| 8,553.00                    | 31.17              | 100.54         | 8,516.17                    | -435.56         | -132.29         | -132.29                       | 4.87                          | 4.62                         | 3.11                        |
| 8,601.00                    | 36.24              | 100.17         | 8,556.09                    | -440.34         | -106.09         | -106.09                       | 10.57                         | 10.56                        | -0.77                       |
| 8,649.00                    | 41.37              | 97.92          | 8,593.49                    | -445.03         | -76.40          | -76.40                        | 11.08                         | 10.69                        | -4.69                       |
| 8,697.00                    | 46.52              | 94.65          | 8,628.04                    | -448.64         | -43.30          | -43.30                        | 11.72                         | 10.73                        | -6.81                       |
| 8,745.00                    | 49.87              | 93.37          | 8,660.03                    | -451.13         | -7.62           | -7.62                         | 7.26                          | 6.98                         | -2.67                       |
| 8,793.00                    | 53.87              | 92.31          | 8,689.66                    | -452.99         | 30.09           | 30.09                         | 8.51                          | 8.33                         | -2.21                       |
| 8,833.79                    | 56.26              | 91.77          | 8,713.02                    | -454.18         | 63.50           | 63.50                         | 5.95                          | 5.85                         | -1.32                       |
| HL Crossing - 8833.79' MD   |                    |                |                             |                 |                 |                               |                               |                              |                             |
| 8,840.00                    | 56.62              | 91.69          | 8,716.46                    | -454.33         | 68.67           | 68.67                         | 5.95                          | 5.85                         | -1.28                       |
| 8,888.00                    | 60.40              | 90.74          | 8,741.52                    | -455.19         | 109.59          | 109.59                        | 8.05                          | 7.88                         | -1.98                       |
| 8,936.00                    | 64.15              | 88.73          | 8,763.85                    | -454.98         | 152.07          | 152.07                        | 8.65                          | 7.81                         | -4.19                       |
| 8,984.00                    | 66.55              | 87.95          | 8,783.87                    | -453.72         | 195.67          | 195.67                        | 5.21                          | 5.00                         | -1.63                       |
| 9,032.00                    | 70.57              | 88.17          | 8,801.41                    | -452.21         | 240.31          | 240.31                        | 8.39                          | 8.38                         | 0.46                        |
| 9,080.00                    | 73.90              | 88.11          | 8,816.06                    | -450.72         | 285.99          | 285.99                        | 6.94                          | 6.94                         | -0.13                       |
| 9,131.00                    | 76.35              | 89.77          | 8,829.15                    | -449.81         | 335.27          | 335.27                        | 5.74                          | 4.80                         | 3.25                        |
| 9,219.00                    | 82.47              | 90.40          | 8,845.31                    | -449.95         | 421.73          | 421.73                        | 6.99                          | 6.95                         | 0.72                        |
| 9,315.00                    | 85.21              | 90.06          | 8,855.61                    | -450.33         | 517.17          | 517.17                        | 2.88                          | 2.85                         | -0.35                       |
| 9,410.00                    | 88.04              | 88.30          | 8,861.21                    | -448.97         | 611.98          | 611.98                        | 3.51                          | 2.98                         | -1.85                       |
| 9,506.00                    | 89.38              | 87.90          | 8,863.37                    | -445.79         | 707.90          | 707.90                        | 1.46                          | 1.40                         | -0.42                       |
| 9,602.00                    | 89.95              | 88.04          | 8,863.93                    | -442.39         | 803.84          | 803.84                        | 0.61                          | 0.59                         | 0.15                        |
| 9,697.00                    | 90.69              | 88.30          | 8,863.40                    | -439.35         | 898.79          | 898.79                        | 0.83                          | 0.78                         | 0.27                        |
| 9,793.00                    | 91.43              | 88.26          | 8,861.62                    | -436.47         | 994.73          | 994.73                        | 0.77                          | 0.77                         | -0.04                       |
| 9,889.00                    | 91.33              | 90.09          | 8,859.31                    | -435.09         | 1,090.68        | 1,090.68                      | 1.91                          | -0.10                        | 1.91                        |
| 9,984.00                    | 90.72              | 91.79          | 8,857.61                    | -436.65         | 1,185.65        | 1,185.65                      | 1.90                          | -0.64                        | 1.79                        |
| 10,080.00                   | 89.62              | 91.64          | 8,857.33                    | -439.52         | 1,281.61        | 1,281.61                      | 1.16                          | -1.15                        | -0.16                       |
| 10,176.00                   | 88.81              | 90.51          | 8,858.64                    | -441.32         | 1,377.58        | 1,377.58                      | 1.45                          | -0.84                        | -1.18                       |
| 10,271.00                   | 89.11              | 90.66          | 8,860.37                    | -442.29         | 1,472.56        | 1,472.56                      | 0.35                          | 0.32                         | 0.16                        |
| 10,367.00                   | 89.65              | 91.08          | 8,861.40                    | -443.75         | 1,568.54        | 1,568.54                      | 0.71                          | 0.56                         | 0.44                        |
| 10,462.00                   | 89.08              | 90.32          | 8,862.46                    | -444.91         | 1,663.53        | 1,663.53                      | 1.00                          | -0.60                        | -0.80                       |
| 10,554.00                   | 89.62              | 89.94          | 8,863.50                    | -445.12         | 1,755.52        | 1,755.52                      | 0.72                          | 0.59                         | -0.41                       |
| 10,645.00                   | 89.08              | 90.19          | 8,864.53                    | -445.22         | 1,846.51        | 1,846.51                      | 0.65                          | -0.59                        | 0.27                        |
| 10,736.00                   | 88.57              | 90.37          | 8,866.40                    | -445.67         | 1,937.49        | 1,937.49                      | 0.59                          | -0.56                        | 0.20                        |
| 10,828.00                   | 89.08              | 89.38          | 8,868.29                    | -445.47         | 2,029.47        | 2,029.47                      | 1.21                          | 0.55                         | -1.08                       |
| 10,919.00                   | 88.77              | 88.62          | 8,869.99                    | -443.88         | 2,120.44        | 2,120.44                      | 0.90                          | -0.34                        | -0.84                       |
| 11,011.00                   | 88.88              | 88.96          | 8,871.88                    | -441.94         | 2,212.40        | 2,212.40                      | 0.39                          | 0.12                         | 0.37                        |
| 11,103.00                   | 88.84              | 88.67          | 8,873.71                    | -440.03         | 2,304.36        | 2,304.36                      | 0.32                          | -0.04                        | -0.32                       |
| 11,194.00                   | 89.62              | 89.20          | 8,874.93                    | -438.34         | 2,395.34        | 2,395.34                      | 1.04                          | 0.86                         | 0.58                        |
| 11,285.00                   | 90.18              | 89.48          | 8,875.09                    | -437.30         | 2,486.33        | 2,486.33                      | 0.69                          | 0.62                         | 0.31                        |

# LEAM Drilling Systems LLC

## Survey Report

Company: Devon Energy  
Project: Eddy County, NM (NAD-83)  
Site: Onyx PWU 29-28  
Well: 9H  
Wellbore: OH  
Design: OH

Local Co-ordinate Reference: Well 9H  
TVD Reference: 3313.4' GE + 23.5' KB @ 3336.90usft  
MD Reference: 3313.4' GE + 23.5' KB @ 3336.90usft  
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) |
|-----------------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|
| 11,377.00                         | 90.38              | 90.08          | 8,874.64                    | -436.94         | 2,578.33        | 2,578.33                      | 0.69                          | 0.22                         | 0.65                        |
| 11,469.00                         | 89.82              | 90.32          | 8,874.48                    | -437.26         | 2,670.33        | 2,670.33                      | 0.66                          | -0.61                        | 0.26                        |
| 11,560.00                         | 90.07              | 89.39          | 8,874.57                    | -437.03         | 2,761.33        | 2,761.33                      | 1.06                          | 0.27                         | -1.02                       |
| 11,652.00                         | 88.44              | 91.78          | 8,875.77                    | -437.97         | 2,853.31        | 2,853.31                      | 3.14                          | -1.77                        | 2.60                        |
| 11,742.00                         | 88.07              | 91.66          | 8,878.51                    | -440.67         | 2,943.22        | 2,943.22                      | 0.43                          | -0.41                        | -0.13                       |
| 11,838.00                         | 88.27              | 90.20          | 8,881.57                    | -442.23         | 3,039.16        | 3,039.16                      | 1.53                          | 0.21                         | -1.52                       |
| 11,934.00                         | 88.74              | 89.92          | 8,884.08                    | -442.33         | 3,135.13        | 3,135.13                      | 0.57                          | 0.49                         | -0.29                       |
| 12,029.00                         | 89.31              | 89.90          | 8,885.69                    | -442.18         | 3,230.11        | 3,230.11                      | 0.60                          | 0.60                         | -0.02                       |
| 12,125.00                         | 90.59              | 89.32          | 8,885.78                    | -441.53         | 3,326.11        | 3,326.11                      | 1.46                          | 1.33                         | -0.60                       |
| 12,221.00                         | 90.52              | 90.25          | 8,884.85                    | -441.17         | 3,422.10        | 3,422.10                      | 0.97                          | -0.07                        | 0.97                        |
| 12,316.00                         | 91.19              | 89.73          | 8,883.43                    | -441.15         | 3,517.09        | 3,517.09                      | 0.89                          | 0.71                         | -0.55                       |
| 12,412.00                         | 90.79              | 89.34          | 8,881.77                    | -440.37         | 3,613.07        | 3,613.07                      | 0.58                          | -0.42                        | -0.41                       |
| 12,508.00                         | 89.85              | 89.93          | 8,881.23                    | -439.76         | 3,709.07        | 3,709.07                      | 1.16                          | -0.98                        | 0.61                        |
| 12,603.00                         | 90.42              | 89.91          | 8,881.01                    | -439.63         | 3,804.07        | 3,804.07                      | 0.60                          | 0.60                         | -0.02                       |
| 12,699.00                         | 88.91              | 89.66          | 8,881.57                    | -439.27         | 3,900.06        | 3,900.06                      | 1.59                          | -1.57                        | -0.26                       |
| 12,795.00                         | 88.30              | 89.22          | 8,883.91                    | -438.33         | 3,996.03        | 3,996.03                      | 0.78                          | -0.64                        | -0.46                       |
| 12,890.00                         | 88.47              | 89.51          | 8,886.59                    | -437.28         | 4,090.98        | 4,090.98                      | 0.35                          | 0.18                         | 0.31                        |
| 12,986.00                         | 89.21              | 89.93          | 8,888.53                    | -436.81         | 4,186.96        | 4,186.96                      | 0.89                          | 0.77                         | 0.44                        |
| 13,082.00                         | 88.81              | 90.85          | 8,890.19                    | -437.46         | 4,282.94        | 4,282.94                      | 1.04                          | -0.42                        | 0.96                        |
| 13,177.00                         | 88.81              | 89.91          | 8,892.16                    | -438.09         | 4,377.92        | 4,377.92                      | 0.99                          | 0.00                         | -0.99                       |
| 13,273.00                         | 89.04              | 90.39          | 8,893.96                    | -438.34         | 4,473.90        | 4,473.90                      | 0.55                          | 0.24                         | 0.50                        |
| 13,368.00                         | 89.28              | 90.81          | 8,895.36                    | -439.34         | 4,568.89        | 4,568.89                      | 0.51                          | 0.25                         | 0.44                        |
| 13,464.00                         | 89.55              | 90.78          | 8,896.34                    | -440.67         | 4,664.87        | 4,664.87                      | 0.28                          | 0.28                         | -0.03                       |
| 13,559.00                         | 87.80              | 90.81          | 8,898.53                    | -441.99         | 4,759.83        | 4,759.83                      | 1.84                          | -1.84                        | 0.03                        |
| 13,655.00                         | 88.33              | 90.07          | 8,901.77                    | -442.72         | 4,855.77        | 4,855.77                      | 0.95                          | 0.55                         | -0.77                       |
| 13,750.00                         | 88.21              | 91.17          | 8,904.64                    | -443.75         | 4,950.72        | 4,950.72                      | 1.16                          | -0.13                        | 1.16                        |
| 13,829.32                         | 88.57              | 90.48          | 8,906.87                    | -444.89         | 5,030.00        | 5,030.00                      | 0.98                          | 0.45                         | -0.88                       |
| <b>SL Crossing - 13829.32' MD</b> |                    |                |                             |                 |                 |                               |                               |                              |                             |
| 13,846.00                         | 88.64              | 90.33          | 8,907.28                    | -445.01         | 5,046.68        | 5,046.68                      | 0.98                          | 0.45                         | -0.87                       |
| 13,941.00                         | 89.02              | 88.69          | 8,909.22                    | -444.19         | 5,141.65        | 5,141.65                      | 1.77                          | 0.40                         | -1.73                       |
| 14,037.00                         | 89.65              | 88.86          | 8,910.33                    | -442.14         | 5,237.62        | 5,237.62                      | 0.68                          | 0.66                         | 0.18                        |
| 14,133.00                         | 89.15              | 89.39          | 8,911.34                    | -440.68         | 5,333.61        | 5,333.61                      | 0.76                          | -0.52                        | 0.55                        |
| 14,228.00                         | 90.09              | 88.38          | 8,911.97                    | -438.83         | 5,428.58        | 5,428.58                      | 1.45                          | 0.99                         | -1.06                       |
| 14,324.00                         | 90.25              | 87.88          | 8,911.68                    | -435.69         | 5,524.53        | 5,524.53                      | 0.55                          | 0.17                         | -0.52                       |
| 14,419.00                         | 90.29              | 88.98          | 8,911.24                    | -433.09         | 5,619.49        | 5,619.49                      | 1.16                          | 0.04                         | 1.16                        |
| 14,515.00                         | 90.36              | 88.09          | 8,910.69                    | -430.64         | 5,715.46        | 5,715.46                      | 0.93                          | 0.07                         | -0.93                       |
| 14,610.00                         | 90.56              | 89.18          | 8,909.93                    | -428.37         | 5,810.43        | 5,810.43                      | 1.17                          | 0.21                         | 1.15                        |
| 14,801.00                         | 90.29              | 89.18          | 8,908.51                    | -425.64         | 6,001.40        | 6,001.40                      | 0.14                          | -0.14                        | 0.00                        |
| 14,897.00                         | 88.54              | 88.82          | 8,909.49                    | -423.97         | 6,097.38        | 6,097.38                      | 1.86                          | -1.82                        | -0.38                       |
| 14,993.00                         | 88.78              | 89.58          | 8,911.74                    | -422.63         | 6,193.34        | 6,193.34                      | 0.83                          | 0.25                         | 0.79                        |
| 15,088.00                         | 89.31              | 89.09          | 8,913.32                    | -421.52         | 6,288.32        | 6,288.32                      | 0.76                          | 0.56                         | -0.52                       |
| 15,184.00                         | 89.08              | 89.10          | 8,914.67                    | -420.01         | 6,384.30        | 6,384.30                      | 0.24                          | -0.24                        | 0.01                        |
| 15,279.00                         | 89.95              | 88.84          | 8,915.47                    | -418.30         | 6,479.28        | 6,479.28                      | 0.96                          | 0.92                         | -0.27                       |
| 15,375.00                         | 88.47              | 89.94          | 8,916.80                    | -417.28         | 6,575.26        | 6,575.26                      | 1.92                          | -1.54                        | 1.15                        |

# LEAM Drilling Systems LLC

## Survey Report

Company: Devon Energy  
Project: Eddy County, NM (NAD-83)  
Site: Onyx PWU 29-28  
Well: 9H  
Wellbore: OH  
Design: OH

Local Co-ordinate Reference: Well 9H  
TVD Reference: 3313.4' GE + 23.5' KB @ 3336.90usft  
MD Reference: 3313.4' GE + 23.5' KB @ 3336.90usft  
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) |
|----------------------------------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|
| 15,470.00                                          | 88.95              | 89.41          | 8,918.94                    | -416.74         | 6,670.24        | 6,670.24                      | 0.75                          | 0.51                         | -0.56                       |
| 15,566.00                                          | 88.78              | 90.41          | 8,920.84                    | -416.59         | 6,766.22        | 6,766.22                      | 1.06                          | -0.18                        | 1.04                        |
| 15,661.00                                          | 88.91              | 89.96          | 8,922.75                    | -416.90         | 6,861.20        | 6,861.20                      | 0.49                          | 0.14                         | -0.47                       |
| 15,757.00                                          | 88.98              | 90.67          | 8,924.52                    | -417.42         | 6,957.18        | 6,957.18                      | 0.74                          | 0.07                         | 0.74                        |
| 15,853.00                                          | 89.85              | 89.95          | 8,925.50                    | -417.94         | 7,053.17        | 7,053.17                      | 1.18                          | 0.91                         | -0.75                       |
| 15,893.00                                          | 89.84              | 90.44          | 8,925.61                    | -418.08         | 7,093.17        | 7,093.17                      | 1.23                          | -0.03                        | 1.23                        |
| 15,989.00                                          | 89.40              | 89.63          | 8,926.25                    | -418.14         | 7,189.17        | 7,189.17                      | 0.96                          | -0.46                        | -0.84                       |
| 16,084.00                                          | 89.42              | 89.48          | 8,927.22                    | -417.40         | 7,284.16        | 7,284.16                      | 0.16                          | 0.02                         | -0.16                       |
| 16,179.00                                          | 89.03              | 89.31          | 8,928.51                    | -416.40         | 7,379.14        | 7,379.14                      | 0.45                          | -0.41                        | -0.18                       |
| 16,275.00                                          | 88.88              | 89.50          | 8,930.26                    | -415.40         | 7,475.12        | 7,475.12                      | 0.25                          | -0.16                        | 0.20                        |
| 16,371.00                                          | 89.51              | 88.17          | 8,931.61                    | -413.45         | 7,571.09        | 7,571.09                      | 1.53                          | 0.66                         | -1.39                       |
| 16,466.00                                          | 88.25              | 89.46          | 8,933.47                    | -411.48         | 7,666.05        | 7,666.05                      | 1.90                          | -1.33                        | 1.36                        |
| 16,562.00                                          | 88.29              | 89.69          | 8,936.36                    | -410.77         | 7,762.00        | 7,762.00                      | 0.24                          | 0.04                         | 0.24                        |
| 16,657.00                                          | 88.90              | 89.91          | 8,938.69                    | -410.44         | 7,856.97        | 7,856.97                      | 0.68                          | 0.64                         | 0.23                        |
| 16,753.00                                          | 89.28              | 89.91          | 8,940.22                    | -410.29         | 7,952.96        | 7,952.96                      | 0.40                          | 0.40                         | 0.00                        |
| 16,849.00                                          | 89.39              | 90.32          | 8,941.33                    | -410.48         | 8,048.95        | 8,048.95                      | 0.44                          | 0.11                         | 0.43                        |
| 16,944.00                                          | 89.32              | 88.93          | 8,942.40                    | -409.86         | 8,143.94        | 8,143.94                      | 1.46                          | -0.07                        | -1.46                       |
| 17,040.00                                          | 89.46              | 88.81          | 8,943.42                    | -407.97         | 8,239.92        | 8,239.92                      | 0.19                          | 0.15                         | -0.13                       |
| 17,135.00                                          | 89.78              | 88.97          | 8,944.05                    | -406.13         | 8,334.90        | 8,334.90                      | 0.38                          | 0.34                         | 0.17                        |
| 17,231.00                                          | 90.06              | 88.85          | 8,944.19                    | -404.30         | 8,430.88        | 8,430.88                      | 0.32                          | 0.29                         | -0.13                       |
| 17,326.00                                          | 90.20              | 88.64          | 8,943.97                    | -402.22         | 8,525.86        | 8,525.86                      | 0.27                          | 0.15                         | -0.22                       |
| 17,422.00                                          | 90.35              | 88.84          | 8,943.51                    | -400.11         | 8,621.83        | 8,621.83                      | 0.26                          | 0.16                         | 0.21                        |
| 17,518.00                                          | 90.66              | 89.06          | 8,942.67                    | -398.35         | 8,717.81        | 8,717.81                      | 0.40                          | 0.32                         | 0.23                        |
| 17,613.00                                          | 90.26              | 88.49          | 8,941.90                    | -396.32         | 8,812.79        | 8,812.79                      | 0.73                          | -0.42                        | -0.60                       |
| 17,709.00                                          | 90.00              | 89.13          | 8,941.69                    | -394.33         | 8,908.77        | 8,908.77                      | 0.72                          | -0.27                        | 0.67                        |
| 17,805.00                                          | 89.26              | 89.02          | 8,942.30                    | -392.78         | 9,004.75        | 9,004.75                      | 0.78                          | -0.77                        | -0.11                       |
| 17,900.00                                          | 88.72              | 89.22          | 8,943.98                    | -391.32         | 9,099.73        | 9,099.73                      | 0.61                          | -0.57                        | 0.21                        |
| 17,996.00                                          | 90.10              | 89.30          | 8,944.97                    | -390.08         | 9,195.71        | 9,195.71                      | 1.44                          | 1.44                         | 0.08                        |
| 18,091.00                                          | 90.27              | 89.97          | 8,944.66                    | -389.47         | 9,290.71        | 9,290.71                      | 0.73                          | 0.18                         | 0.71                        |
| 18,187.00                                          | 88.58              | 90.04          | 8,945.62                    | -389.48         | 9,386.70        | 9,386.70                      | 1.76                          | -1.76                        | 0.07                        |
| 18,282.00                                          | 86.66              | 90.02          | 8,949.57                    | -389.53         | 9,481.61        | 9,481.61                      | 2.02                          | -2.02                        | -0.02                       |
| 18,377.00                                          | 86.82              | 89.49          | 8,954.97                    | -389.12         | 9,576.46        | 9,576.46                      | 0.58                          | 0.17                         | -0.56                       |
| 18,473.00                                          | 86.76              | 89.72          | 8,960.35                    | -388.46         | 9,672.30        | 9,672.30                      | 0.25                          | -0.06                        | 0.24                        |
| 18,569.00                                          | 87.22              | 89.90          | 8,965.39                    | -388.15         | 9,768.17        | 9,768.17                      | 0.51                          | 0.48                         | 0.19                        |
| 18,664.00                                          | 87.10              | 89.63          | 8,970.10                    | -387.76         | 9,863.05        | 9,863.05                      | 0.31                          | -0.13                        | -0.28                       |
| 18,758.00                                          | 87.56              | 89.86          | 8,974.47                    | -387.34         | 9,956.95        | 9,956.95                      | 0.55                          | 0.49                         | 0.24                        |
| 18,777.00                                          | 87.85              | 89.83          | 8,975.24                    | -387.29         | 9,975.94        | 9,975.94                      | 1.53                          | 1.53                         | -0.16                       |
| 18,779.07                                          | 87.85              | 89.83          | 8,975.31                    | -387.28         | 9,978.00        | 9,978.00                      | 0.00                          | 0.00                         | 0.00                        |
| HL Crossing - 18779.07' MD - PBHL (O PWU 29-28 9H) |                    |                |                             |                 |                 |                               |                               |                              |                             |
| 18,909.00                                          | 87.85              | 89.83          | 8,980.19                    | -386.90         | 10,107.84       | 10,107.84                     | 0.00                          | 0.00                         | 0.00                        |
| Projection - BHL (Onyx 9H)                         |                    |                |                             |                 |                 |                               |                               |                              |                             |

# LEAM Drilling Systems LLC

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North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
Database: EDM 5000.1 Multi User Db

### Design Targets

#### Target Name

| - 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 (Onyx 9H)<br>- actual wellpath hits target center<br>- Point                                                                       | 0.00             | 0.00            | 0.00          | 0.00            | 0.00            | 596,305.26         | 611,703.20        | 32° 38' 20.7014 N | 104° 6' 17.0602 W |
| BHL (Onyx 9H)<br>- actual wellpath misses target center by 0.01usft at 18909.00usft MD (8980.19 TVD, -386.90 N, 10107.84 E)<br>- Point | 0.00             | 0.00            | 8,980.19      | -386.90         | 10,107.84       | 595,918.36         | 621,811.04        | 32° 38' 16.6423 N | 104° 4' 18.8592 W |

### Design Annotations

| Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Local Coordinates |                 | Comment                    |
|-----------------------------|-----------------------------|-------------------|-----------------|----------------------------|
|                             |                             | +N/-S<br>(usft)   | +E/-W<br>(usft) |                            |
| 8,833.79                    | 8,713.02                    | -454.18           | 63.50           | HL Crossing - 8833.79' MD  |
| 13,829.32                   | 8,906.87                    | -444.89           | 5,030.00        | SL Crossing - 13829.32' MD |
| 18,779.07                   | 8,975.31                    | -387.28           | 9,978.00        | HL Crossing - 18779.07' MD |
| 18,909.00                   | 8,980.19                    | -386.90           | 10,107.84       | Projection                 |

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