



## Phoenix Technology Services LP

Survey Report

30-015-43937



Company: Chevron  
 Project: Eddy County, NM (NAD27 NME)  
 Site: HH SO 10 P3  
 Well: #8H  
 Wellbore: OH / Job #60836  
 Design: Surveys (Patterson 270)

Local Co-ordinate Reference: Well #8H  
 TVD Reference: GL + KB @ 3307.50usft (Patterson 270)  
 MD Reference: GL + KB @ 3307.50usft (Patterson 270)  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature  
 Database: Compass 5000 GCR

**NM OIL CONSERVATION  
 ARTESIA DISTRICT**

|             |                                      |                              |
|-------------|--------------------------------------|------------------------------|
| Project     | Eddy County, NM (NAD27 NME)          | JUL 03 2018                  |
| Map System: | US State Plane 1927 (Exact solution) | System Datum: Mean Sea Level |
| Geo Datum:  | NAD 1927 (NADCON CONUS)              | <b>RECEIVED</b>              |
| Map Zone:   | New Mexico East 3001                 |                              |

|                       |             |              |                 |                   |                     |
|-----------------------|-------------|--------------|-----------------|-------------------|---------------------|
| Site                  | HH SO 10 P3 |              |                 |                   |                     |
| Site Position:        |             | Northing:    | 387,559.00 usft | Latitude:         | 32° 3' 55.51924 N   |
| From: Map             |             | Easting:     | 547,567.00 usft | Longitude:        | 104° 10' 47.20699 W |
| Position Uncertainty: | 0.00 usft   | Slot Radius: | 13-3/16 "       | Grid Convergence: | 0.08 °              |

|                      |       |           |                     |                 |               |                     |
|----------------------|-------|-----------|---------------------|-----------------|---------------|---------------------|
| Well                 | #8H   |           |                     |                 |               |                     |
| Well Position        | +N/-S | 0.00 usft | Northing:           | 387,584.00 usft | Latitude:     | 32° 3' 55.76665 N   |
|                      | +E/-W | 0.00 usft | Easting:            | 547,567.00 usft | Longitude:    | 104° 10' 47.20658 W |
| Position Uncertainty |       | 0.00 usft | Wellhead Elevation: | 0.00 usft       | Ground Level: | 3,279.00 usft       |

|           |                 |             |                 |               |                     |
|-----------|-----------------|-------------|-----------------|---------------|---------------------|
| Wellbore  | OH / Job #60836 |             |                 |               |                     |
| Magnetics | Model Name      | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|           | HDGM            | 5/31/2017   | 7.38            | 59.80         | 48,023              |

|                   |                            |                 |                 |                  |      |
|-------------------|----------------------------|-----------------|-----------------|------------------|------|
| Design            | Surveys (Patterson 270)    |                 |                 |                  |      |
| Audit Notes:      |                            |                 |                 |                  |      |
| Version:          | 1.0                        | Phase:          | ACTUAL          | Tie On Depth:    | 0.00 |
| Vertical Section: | Depth From (TVD)<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Direction<br>(°) |      |
|                   | 0.00                       | 0.00            | 0.00            | 174.77           |      |

|                |           |                                       |           |                       |  |
|----------------|-----------|---------------------------------------|-----------|-----------------------|--|
| Survey Program | Date      | 9/27/2017                             |           |                       |  |
| From (usft)    | To (usft) | Survey (Wellbore)                     | Tool Name | Description           |  |
| 173.00         | 460.00    | Teledrift Surveys (OH / Job #60836)   | MWD       | MWD - Standard        |  |
| 460.00         | 20,338.00 | Phoenix MWD Surveys (OH / Job #60836) | MWD+HDGM  | OWSG Rev.2 MWD + HDGM |  |

| 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) |
|---------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 0.00                            | 0.00            | 0.00        | 0.00                  | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 173.00                          | 0.70            | 242.40      | 173.00                | -0.49        | -0.94        | 0.40                    | 0.40                    | 0.40                   | 0.00                  |
| 358.00                          | 1.00            | 238.40      | 357.98                | -1.86        | -3.31        | 1.55                    | 0.17                    | 0.16                   | -2.16                 |
| 436.00                          | 1.60            | 257.40      | 435.96                | -2.45        | -4.96        | 1.99                    | 0.94                    | 0.77                   | 24.36                 |
| 612.00                          | 1.66            | 271.11      | 611.88                | -2.94        | -9.90        | 2.02                    | 0.22                    | 0.03                   | 7.79                  |
| <b>First Phoenix MWD Survey</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 705.00                          | 0.63            | 130.94      | 704.87                | -3.25        | -10.86       | 2.25                    | 2.35                    | -1.11                  | -150.72               |
| 795.00                          | 6.38            | 110.21      | 794.67                | -5.30        | -5.79        | 4.75                    | 6.44                    | 6.39                   | -23.03                |
| 857.00                          | 9.36            | 111.71      | 856.08                | -8.36        | 2.13         | 8.52                    | 4.82                    | 4.81                   | 2.42                  |
| 952.00                          | 9.47            | 112.32      | 949.80                | -14.18       | 16.53        | 15.63                   | 0.16                    | 0.12                   | 0.64                  |



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**Design:** Surveys (Patterson 270)

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**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Compass 5000 GCR

### 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) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 1,047.00              | 9.04            | 111.86      | 1,043.56              | -19.93       | 30.69        | 22.65                   | 0.46                    | -0.45                  | -0.48                 |
| 1,142.00              | 8.47            | 112.18      | 1,137.45              | -25.35       | 44.10        | 29.27                   | 0.60                    | -0.60                  | 0.34                  |
| 1,237.00              | 9.07            | 116.41      | 1,231.34              | -31.32       | 57.28        | 36.41                   | 0.93                    | 0.63                   | 4.45                  |
| 1,332.00              | 11.00           | 119.68      | 1,324.89              | -39.14       | 71.86        | 45.53                   | 2.12                    | 2.03                   | 3.44                  |
| 1,428.00              | 10.74           | 120.27      | 1,419.16              | -48.19       | 87.55        | 55.97                   | 0.29                    | -0.27                  | 0.61                  |
| 1,523.00              | 10.14           | 121.44      | 1,512.59              | -57.01       | 102.33       | 66.10                   | 0.67                    | -0.63                  | 1.23                  |
| 1,618.00              | 9.99            | 120.95      | 1,606.13              | -65.61       | 116.53       | 75.96                   | 0.18                    | -0.16                  | -0.52                 |
| 1,712.00              | 9.86            | 121.72      | 1,698.72              | -74.03       | 130.37       | 85.61                   | 0.20                    | -0.14                  | 0.82                  |
| 1,806.00              | 9.57            | 122.14      | 1,791.37              | -82.42       | 143.83       | 95.19                   | 0.32                    | -0.31                  | 0.45                  |
| 1,901.00              | 9.17            | 120.18      | 1,885.11              | -90.43       | 157.06       | 104.37                  | 0.54                    | -0.42                  | -2.06                 |
| 1,995.00              | 11.06           | 112.22      | 1,977.65              | -97.61       | 171.88       | 112.87                  | 2.50                    | 2.01                   | -8.47                 |
| 2,090.00              | 14.24           | 106.32      | 2,070.33              | -104.34      | 191.54       | 121.36                  | 3.61                    | 3.35                   | -6.21                 |
| 2,185.00              | 14.31           | 105.44      | 2,162.40              | -110.75      | 214.07       | 129.80                  | 0.24                    | 0.07                   | -0.93                 |
| 2,279.00              | 13.62           | 105.52      | 2,253.62              | -116.80      | 235.93       | 137.82                  | 0.73                    | -0.73                  | 0.09                  |
| 2,374.00              | 12.67           | 107.09      | 2,346.13              | -122.86      | 256.67       | 145.74                  | 1.07                    | -1.00                  | 1.65                  |
| 2,469.00              | 12.58           | 108.39      | 2,438.83              | -129.18      | 276.44       | 153.84                  | 0.31                    | -0.09                  | 1.37                  |
| 2,564.00              | 12.57           | 109.82      | 2,531.55              | -135.95      | 295.98       | 162.36                  | 0.33                    | -0.01                  | 1.51                  |
| 2,659.00              | 12.59           | 108.85      | 2,624.27              | -142.80      | 315.51       | 170.97                  | 0.22                    | 0.02                   | -1.02                 |
| 2,754.00              | 12.51           | 108.83      | 2,717.00              | -149.47      | 335.04       | 179.39                  | 0.08                    | -0.08                  | -0.02                 |
| 2,850.00              | 12.22           | 111.13      | 2,810.78              | -156.48      | 354.36       | 188.14                  | 0.60                    | -0.30                  | 2.40                  |
| 2,945.00              | 11.99           | 111.35      | 2,903.67              | -163.70      | 372.93       | 197.02                  | 0.25                    | -0.24                  | 0.23                  |
| 3,040.00              | 11.94           | 110.83      | 2,996.60              | -170.79      | 391.31       | 205.75                  | 0.13                    | -0.05                  | -0.55                 |
| 3,135.00              | 11.95           | 112.47      | 3,089.54              | -178.04      | 409.58       | 214.64                  | 0.36                    | 0.01                   | 1.73                  |
| 3,230.00              | 11.62           | 111.39      | 3,182.54              | -185.29      | 427.58       | 223.50                  | 0.42                    | -0.35                  | -1.14                 |
| 3,325.00              | 11.54           | 112.16      | 3,275.61              | -192.36      | 445.29       | 232.15                  | 0.18                    | -0.08                  | 0.81                  |
| 3,420.00              | 11.61           | 112.18      | 3,368.68              | -199.56      | 462.94       | 240.93                  | 0.07                    | 0.07                   | 0.02                  |
| 3,515.00              | 11.75           | 111.71      | 3,461.71              | -206.74      | 480.78       | 249.71                  | 0.18                    | 0.15                   | -0.49                 |
| 3,610.00              | 10.14           | 112.94      | 3,554.98              | -213.58      | 497.47       | 258.04                  | 1.71                    | -1.69                  | 1.29                  |
| 3,704.00              | 9.01            | 113.69      | 3,647.67              | -219.76      | 511.83       | 265.51                  | 1.21                    | -1.20                  | 0.80                  |
| 3,799.00              | 8.86            | 114.60      | 3,741.51              | -225.80      | 525.29       | 272.74                  | 0.22                    | -0.16                  | 0.96                  |
| 3,893.00              | 8.96            | 115.30      | 3,834.38              | -231.94      | 538.49       | 280.06                  | 0.16                    | 0.11                   | 0.74                  |
| 3,987.00              | 8.58            | 117.99      | 3,927.28              | -238.36      | 551.30       | 287.62                  | 0.59                    | -0.40                  | 2.86                  |
| 4,082.00              | 8.30            | 119.58      | 4,021.25              | -245.07      | 563.52       | 295.42                  | 0.38                    | -0.29                  | 1.67                  |
| 4,177.00              | 8.24            | 120.23      | 4,115.26              | -251.88      | 575.37       | 303.28                  | 0.12                    | -0.06                  | 0.68                  |
| 4,271.00              | 8.09            | 120.92      | 4,208.31              | -258.67      | 586.86       | 311.09                  | 0.19                    | -0.16                  | 0.73                  |
| 4,366.00              | 7.83            | 121.68      | 4,302.40              | -265.51      | 598.10       | 318.92                  | 0.30                    | -0.27                  | 0.80                  |
| 4,460.00              | 7.66            | 119.84      | 4,395.54              | -271.99      | 608.99       | 326.37                  | 0.32                    | -0.18                  | -1.96                 |
| 4,555.00              | 7.29            | 121.95      | 4,489.73              | -278.33      | 619.59       | 333.65                  | 0.48                    | -0.39                  | 2.22                  |
| 4,649.00              | 6.80            | 122.88      | 4,583.02              | -284.50      | 629.33       | 340.69                  | 0.54                    | -0.52                  | 0.99                  |
| 4,743.00              | 6.24            | 123.46      | 4,676.41              | -290.34      | 638.26       | 347.31                  | 0.60                    | -0.60                  | 0.62                  |
| 4,837.00              | 5.87            | 122.84      | 4,769.89              | -295.76      | 646.56       | 353.47                  | 0.40                    | -0.39                  | -0.66                 |
| 4,931.00              | 5.45            | 122.91      | 4,863.43              | -300.80      | 654.35       | 359.19                  | 0.45                    | -0.45                  | 0.07                  |
| 5,025.00              | 5.27            | 125.47      | 4,957.02              | -305.73      | 661.61       | 364.76                  | 0.32                    | -0.19                  | 2.72                  |



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### Survey

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|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 5,120.00              | 5.11            | 126.79      | 5,051.63              | -310.79      | 668.55       | 370.44                  | 0.21                    | -0.17                  | 1.39                  |
| 5,215.00              | 5.35            | 124.82      | 5,146.23              | -315.85      | 675.58       | 376.12                  | 0.32                    | 0.25                   | -2.07                 |
| 5,310.00              | 6.64            | 123.25      | 5,240.71              | -321.40      | 683.81       | 382.39                  | 1.37                    | 1.36                   | -1.65                 |
| 5,405.00              | 6.38            | 122.50      | 5,335.10              | -327.24      | 692.85       | 389.04                  | 0.29                    | -0.27                  | -0.79                 |
| 5,501.00              | 5.92            | 122.83      | 5,430.55              | -332.79      | 701.51       | 395.36                  | 0.48                    | -0.48                  | 0.34                  |
| 5,595.00              | 5.62            | 124.60      | 5,524.07              | -338.03      | 709.37       | 401.29                  | 0.37                    | -0.32                  | 1.88                  |
| 5,689.00              | 5.30            | 126.21      | 5,617.65              | -343.21      | 716.66       | 407.11                  | 0.38                    | -0.34                  | 1.71                  |
| 5,783.00              | 4.71            | 131.67      | 5,711.29              | -348.34      | 723.05       | 412.80                  | 0.81                    | -0.63                  | 5.81                  |
| 5,878.00              | 4.35            | 129.45      | 5,805.99              | -353.23      | 728.75       | 418.19                  | 0.42                    | -0.38                  | -2.34                 |
| 5,980.00              | 3.70            | 134.53      | 5,907.74              | -357.99      | 734.08       | 423.42                  | 0.73                    | -0.64                  | 4.98                  |
| 6,075.00              | 3.21            | 138.93      | 6,002.57              | -362.15      | 738.01       | 427.91                  | 0.59                    | -0.52                  | 4.63                  |
| 6,169.00              | 3.07            | 138.74      | 6,096.42              | -366.02      | 741.40       | 432.08                  | 0.15                    | -0.15                  | -0.20                 |
| 6,264.00              | 2.60            | 145.96      | 6,191.31              | -369.72      | 744.28       | 436.03                  | 0.62                    | -0.49                  | 7.60                  |
| 6,359.00              | 2.24            | 153.29      | 6,286.22              | -373.17      | 746.33       | 439.64                  | 0.50                    | -0.38                  | 7.72                  |
| 6,453.00              | 1.63            | 162.20      | 6,380.17              | -376.08      | 747.56       | 442.66                  | 0.72                    | -0.65                  | 9.48                  |
| 6,548.00              | 1.37            | 178.18      | 6,475.14              | -378.50      | 748.01       | 445.11                  | 0.52                    | -0.27                  | 16.82                 |
| 6,642.00              | 1.50            | 185.90      | 6,569.11              | -380.85      | 747.92       | 447.44                  | 0.25                    | 0.14                   | 8.21                  |
| 6,737.00              | 1.43            | 188.86      | 6,664.08              | -383.26      | 747.61       | 449.81                  | 0.11                    | -0.07                  | 3.12                  |
| 6,832.00              | 1.20            | 193.42      | 6,759.05              | -385.39      | 747.19       | 451.90                  | 0.27                    | -0.24                  | 4.80                  |
| 6,927.00              | 0.86            | 190.05      | 6,854.04              | -387.06      | 746.84       | 453.53                  | 0.36                    | -0.36                  | -3.55                 |
| 7,022.00              | 0.60            | 194.07      | 6,949.03              | -388.25      | 746.59       | 454.69                  | 0.28                    | -0.27                  | 4.23                  |
| 7,117.00              | 0.36            | 191.96      | 7,044.03              | -389.02      | 746.41       | 455.44                  | 0.25                    | -0.25                  | -2.22                 |
| 7,211.00              | 0.26            | 243.32      | 7,138.02              | -389.41      | 746.16       | 455.80                  | 0.30                    | -0.11                  | 54.64                 |
| 7,306.00              | 0.37            | 260.49      | 7,233.02              | -389.56      | 745.66       | 455.91                  | 0.15                    | 0.12                   | 18.07                 |
| 7,400.00              | 0.24            | 247.09      | 7,327.02              | -389.68      | 745.18       | 455.99                  | 0.16                    | -0.14                  | -14.26                |
| 7,495.00              | 0.27            | 220.81      | 7,422.02              | -389.93      | 744.85       | 456.20                  | 0.13                    | 0.03                   | -27.66                |
| 7,590.00              | 0.22            | 211.06      | 7,517.02              | -390.25      | 744.61       | 456.51                  | 0.07                    | -0.05                  | -10.26                |
| 7,685.00              | 0.28            | 226.12      | 7,612.02              | -390.57      | 744.35       | 456.80                  | 0.09                    | 0.06                   | 15.85                 |
| 7,780.00              | 0.49            | 221.41      | 7,707.02              | -391.04      | 743.92       | 457.22                  | 0.22                    | 0.22                   | -4.96                 |
| 7,875.00              | 0.34            | 181.88      | 7,802.01              | -391.62      | 743.64       | 457.78                  | 0.33                    | -0.16                  | -41.61                |
| 7,970.00              | 0.21            | 144.99      | 7,897.01              | -392.05      | 743.73       | 458.21                  | 0.22                    | -0.14                  | -38.83                |
| 8,065.00              | 0.10            | 129.68      | 7,992.01              | -392.24      | 743.89       | 458.42                  | 0.12                    | -0.12                  | -16.12                |
| 8,160.00              | 0.32            | 188.46      | 8,087.01              | -392.56      | 743.92       | 458.74                  | 0.30                    | 0.23                   | 61.87                 |
| 8,255.00              | 0.55            | 179.81      | 8,182.01              | -393.28      | 743.88       | 459.45                  | 0.25                    | 0.24                   | -9.11                 |
| 8,349.00              | 0.61            | 182.36      | 8,276.00              | -394.23      | 743.86       | 460.40                  | 0.07                    | 0.06                   | 2.71                  |
| 8,444.00              | 0.51            | 170.09      | 8,371.00              | -395.15      | 743.91       | 461.32                  | 0.16                    | -0.11                  | -12.92                |
| 8,539.00              | 0.60            | 171.47      | 8,466.00              | -396.06      | 744.06       | 462.24                  | 0.10                    | 0.09                   | 1.45                  |
| 8,634.00              | 0.57            | 163.13      | 8,560.99              | -397.00      | 744.27       | 463.20                  | 0.09                    | -0.03                  | -8.78                 |
| 8,729.00              | 0.37            | 160.11      | 8,655.99              | -397.74      | 744.51       | 463.95                  | 0.21                    | -0.21                  | -3.18                 |
| 8,824.00              | 0.42            | 160.45      | 8,750.98              | -398.36      | 744.73       | 464.59                  | 0.05                    | 0.05                   | 0.36                  |
| 8,919.00              | 0.36            | 154.34      | 8,845.98              | -398.96      | 744.98       | 465.21                  | 0.08                    | -0.06                  | -6.43                 |
| 9,013.00              | 0.22            | 135.43      | 8,939.98              | -399.35      | 745.23       | 465.62                  | 0.18                    | -0.15                  | -20.12                |
| 9,108.00              | 0.19            | 174.13      | 9,034.98              | -399.64      | 745.38       | 465.92                  | 0.15                    | -0.03                  | 40.74                 |



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|------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 9,203.00                     | 0.23            | 187.82      | 9,129.98              | -399.98      | 745.37       | 466.26                  | 0.07                    | 0.04                   | 14.41                 |
| 9,298.00                     | 0.51            | 200.58      | 9,224.98              | -400.57      | 745.19       | 466.83                  | 0.31                    | 0.29                   | 13.43                 |
| 9,355.00                     | 0.65            | 196.10      | 9,281.98              | -401.12      | 745.01       | 467.36                  | 0.26                    | 0.25                   | -7.86                 |
| 9,438.00                     | 1.03            | 198.15      | 9,364.97              | -402.28      | 744.65       | 468.48                  | 0.46                    | 0.46                   | 2.47                  |
| 9,532.00                     | 11.47           | 167.29      | 9,458.29              | -412.23      | 746.45       | 478.55                  | 11.28                   | 11.11                  | -32.83                |
| 9,627.00                     | 19.76           | 189.43      | 9,549.78              | -437.35      | 745.89       | 503.52                  | 10.60                   | 8.73                   | 23.31                 |
| 9,722.00                     | 32.40           | 188.85      | 9,634.93              | -478.50      | 739.32       | 543.91                  | 13.31                   | 13.31                  | -0.61                 |
| 9,816.00                     | 41.94           | 185.41      | 9,709.76              | -534.80      | 732.47       | 599.34                  | 10.38                   | 10.15                  | -3.66                 |
| 9,911.00                     | 51.46           | 173.09      | 9,774.97              | -603.58      | 733.95       | 667.98                  | 13.73                   | 10.02                  | -12.97                |
| 10,006.00                    | 63.48           | 179.69      | 9,826.00              | -683.32      | 738.67       | 747.81                  | 13.93                   | 12.65                  | 6.95                  |
| 10,101.00                    | 71.46           | 175.22      | 9,862.38              | -770.88      | 742.66       | 835.37                  | 9.46                    | 8.40                   | -4.71                 |
| 10,197.00                    | 79.50           | 175.56      | 9,886.43              | -863.44      | 750.12       | 928.22                  | 8.38                    | 8.38                   | 0.35                  |
| 10,278.00                    | 85.99           | 176.49      | 9,896.66              | -943.55      | 755.68       | 1,008.51                | 8.09                    | 8.01                   | 1.15                  |
| <b>FTP/Hardline Crossing</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 10,292.00                    | 87.11           | 176.65      | 9,897.50              | -957.50      | 756.52       | 1,022.48                | 8.09                    | 8.01                   | 1.13                  |
| 10,386.00                    | 87.73           | 176.76      | 9,901.73              | -1,051.25    | 761.92       | 1,116.33                | 0.67                    | 0.66                   | 0.12                  |
| 10,481.00                    | 89.91           | 176.45      | 9,903.69              | -1,146.06    | 767.54       | 1,211.26                | 2.32                    | 2.29                   | -0.33                 |
| 10,576.00                    | 91.27           | 178.88      | 9,902.71              | -1,240.97    | 771.41       | 1,306.12                | 2.93                    | 1.43                   | 2.56                  |
| 10,697.00                    | 88.70           | 179.14      | 9,902.74              | -1,361.94    | 773.50       | 1,426.78                | 2.13                    | -2.12                  | 0.21                  |
| 10,792.00                    | 88.48           | 178.80      | 9,905.08              | -1,456.89    | 775.21       | 1,521.49                | 0.43                    | -0.23                  | -0.36                 |
| 10,887.00                    | 88.59           | 179.55      | 9,907.51              | -1,551.85    | 776.58       | 1,616.18                | 0.80                    | 0.12                   | 0.79                  |
| 10,979.00                    | 87.21           | 179.11      | 9,910.88              | -1,643.78    | 777.65       | 1,707.83                | 1.57                    | -1.50                  | -0.48                 |
| 11,076.00                    | 87.82           | 178.26      | 9,915.09              | -1,740.66    | 779.87       | 1,804.51                | 1.08                    | 0.63                   | -0.88                 |
| 11,168.00                    | 84.83           | 176.57      | 9,920.98              | -1,832.37    | 784.01       | 1,896.21                | 3.73                    | -3.25                  | -1.84                 |
| 11,261.00                    | 89.04           | 177.80      | 9,925.95              | -1,925.10    | 788.57       | 1,988.97                | 4.72                    | 4.53                   | 1.32                  |
| 11,353.00                    | 90.14           | 178.10      | 9,926.61              | -2,017.04    | 791.86       | 2,080.82                | 1.24                    | 1.20                   | 0.33                  |
| 11,446.00                    | 91.44           | 178.36      | 9,925.33              | -2,109.98    | 794.73       | 2,173.64                | 1.43                    | 1.40                   | 0.28                  |
| 11,539.00                    | 88.53           | 179.18      | 9,925.35              | -2,202.95    | 796.73       | 2,266.41                | 3.25                    | -3.13                  | 0.88                  |
| 11,631.00                    | 89.10           | 178.44      | 9,927.26              | -2,294.91    | 798.64       | 2,358.16                | 1.02                    | 0.62                   | -0.80                 |
| 11,724.00                    | 90.70           | 178.11      | 9,927.42              | -2,387.86    | 801.44       | 2,450.98                | 1.76                    | 1.72                   | -0.35                 |
| 11,817.00                    | 90.58           | 178.99      | 9,926.38              | -2,480.83    | 803.79       | 2,543.77                | 0.95                    | -0.13                  | 0.95                  |
| 11,911.00                    | 88.99           | 181.14      | 9,926.73              | -2,574.82    | 803.69       | 2,637.36                | 2.84                    | -1.69                  | 2.29                  |
| 12,006.00                    | 89.78           | 180.07      | 9,927.75              | -2,669.81    | 802.68       | 2,731.86                | 1.40                    | 0.83                   | -1.13                 |
| 12,101.00                    | 87.87           | 180.15      | 9,929.70              | -2,764.78    | 802.50       | 2,826.42                | 2.01                    | -2.01                  | 0.08                  |
| 12,196.00                    | 87.02           | 178.91      | 9,933.94              | -2,859.68    | 803.28       | 2,921.00                | 1.58                    | -0.89                  | -1.31                 |
| 12,291.00                    | 87.17           | 178.00      | 9,938.75              | -2,954.52    | 805.84       | 3,015.68                | 0.97                    | 0.16                   | -0.96                 |
| 12,386.00                    | 86.26           | 177.45      | 9,944.19              | -3,049.29    | 809.60       | 3,110.40                | 1.12                    | -0.96                  | -0.58                 |
| 12,480.00                    | 85.12           | 178.24      | 9,951.26              | -3,142.96    | 813.13       | 3,203.99                | 1.47                    | -1.21                  | 0.84                  |
| 12,572.00                    | 87.28           | 177.10      | 9,957.36              | -3,234.67    | 816.86       | 3,295.67                | 2.65                    | 2.35                   | -1.24                 |
| 12,667.00                    | 88.46           | 176.48      | 9,960.89              | -3,329.45    | 822.18       | 3,390.54                | 1.40                    | 1.24                   | -0.65                 |
| 12,762.00                    | 89.57           | 177.52      | 9,962.52              | -3,424.31    | 827.15       | 3,485.45                | 1.60                    | 1.17                   | 1.09                  |
| 12,857.00                    | 88.97           | 176.97      | 9,963.73              | -3,519.19    | 831.71       | 3,580.35                | 0.86                    | -0.63                  | -0.58                 |
| 12,952.00                    | 89.25           | 176.91      | 9,965.21              | -3,614.04    | 836.78       | 3,675.27                | 0.30                    | 0.29                   | -0.06                 |
| 13,047.00                    | 89.00           | 177.24      | 9,966.66              | -3,708.91    | 841.63       | 3,770.19                | 0.44                    | -0.26                  | 0.35                  |



# Phoenix Technology Services LP

## Survey Report



**Company:** Chevron  
**Project:** Eddy County, NM (NAD27 NME)  
**Site:** HH SO 10 P3  
**Well:** #8H  
**Wellbore:** OH / Job #60836  
**Design:** Surveys (Patterson 270)

**Local Co-ordinate Reference:** Well #8H  
**TVD Reference:** GL + KB @ 3307.50usft (Patterson 270)  
**MD Reference:** GL + KB @ 3307.50usft (Patterson 270)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Compass 5000 GCR

### 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) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 13,142.00             | 89.35           | 176.24      | 9,968.02              | -3,803.74    | 847.03       | 3,865.12                | 1.12                    | 0.37                   | -1.05                 |
| 13,237.00             | 89.34           | 175.85      | 9,969.11              | -3,898.51    | 853.58       | 3,960.09                | 0.41                    | -0.01                  | -0.41                 |
| 13,331.00             | 88.81           | 174.97      | 9,970.63              | -3,992.19    | 861.10       | 4,054.07                | 1.09                    | -0.56                  | -0.94                 |
| 13,426.00             | 89.58           | 175.44      | 9,971.96              | -4,086.85    | 869.04       | 4,149.06                | 0.95                    | 0.81                   | 0.49                  |
| 13,520.00             | 89.39           | 176.84      | 9,972.81              | -4,180.63    | 875.37       | 4,243.02                | 1.50                    | -0.20                  | 1.49                  |
| 13,615.00             | 89.91           | 178.90      | 9,973.39              | -4,275.56    | 878.90       | 4,337.88                | 2.24                    | 0.55                   | 2.17                  |
| 13,710.00             | 90.15           | 178.23      | 9,973.34              | -4,370.53    | 881.28       | 4,432.67                | 0.75                    | 0.25                   | -0.71                 |
| 13,805.00             | 93.02           | 177.53      | 9,970.71              | -4,465.42    | 884.79       | 4,527.48                | 3.11                    | 3.02                   | -0.74                 |
| 13,900.00             | 93.62           | 177.90      | 9,965.21              | -4,560.18    | 888.58       | 4,622.20                | 0.74                    | 0.63                   | 0.39                  |
| 13,995.00             | 90.04           | 175.85      | 9,962.18              | -4,654.97    | 893.75       | 4,717.06                | 4.34                    | -3.77                  | -2.16                 |
| 14,090.00             | 90.58           | 174.41      | 9,961.66              | -4,749.62    | 901.82       | 4,812.06                | 1.62                    | 0.57                   | -1.52                 |
| 14,185.00             | 90.06           | 176.71      | 9,961.13              | -4,844.33    | 909.17       | 4,907.04                | 2.48                    | -0.55                  | 2.42                  |
| 14,281.00             | 88.29           | 177.83      | 9,962.51              | -4,940.21    | 913.74       | 5,002.93                | 2.18                    | -1.84                  | 1.17                  |
| 14,376.00             | 91.97           | 180.88      | 9,962.30              | -5,035.17    | 914.81       | 5,097.60                | 5.03                    | 3.87                   | 3.21                  |
| 14,471.00             | 92.13           | 182.63      | 9,958.90              | -5,130.06    | 911.90       | 5,191.83                | 1.85                    | 0.17                   | 1.84                  |
| 14,566.00             | 90.84           | 182.08      | 9,956.44              | -5,224.95    | 908.00       | 5,285.97                | 1.48                    | -1.36                  | -0.58                 |
| 14,661.00             | 92.55           | 182.36      | 9,953.63              | -5,319.83    | 904.32       | 5,380.12                | 1.82                    | 1.80                   | 0.29                  |
| 14,756.00             | 90.05           | 184.25      | 9,951.47              | -5,414.64    | 898.85       | 5,474.03                | 3.30                    | -2.63                  | 1.99                  |
| 14,850.00             | 90.47           | 186.58      | 9,951.05              | -5,508.21    | 889.98       | 5,566.41                | 2.52                    | 0.45                   | 2.48                  |
| 14,945.00             | 90.03           | 186.18      | 9,950.63              | -5,602.62    | 879.42       | 5,659.46                | 0.63                    | -0.46                  | -0.42                 |
| 15,039.00             | 94.66           | 184.87      | 9,946.79              | -5,696.08    | 870.38       | 5,751.71                | 5.12                    | 4.93                   | -1.39                 |
| 15,134.00             | 91.05           | 183.25      | 9,942.05              | -5,790.70    | 863.67       | 5,845.32                | 4.16                    | -3.80                  | -1.71                 |
| 15,229.00             | 92.58           | 182.17      | 9,939.05              | -5,885.55    | 859.18       | 5,939.36                | 1.97                    | 1.61                   | -1.14                 |
| 15,324.00             | 89.80           | 179.02      | 9,937.07              | -5,980.50    | 858.19       | 6,033.83                | 4.42                    | -2.93                  | -3.32                 |
| 15,419.00             | 90.41           | 179.09      | 9,936.90              | -6,075.49    | 859.76       | 6,128.56                | 0.65                    | 0.64                   | 0.07                  |
| 15,514.00             | 91.67           | 179.11      | 9,935.17              | -6,170.46    | 861.25       | 6,223.28                | 1.33                    | 1.33                   | 0.02                  |
| 15,609.00             | 92.17           | 178.68      | 9,931.99              | -6,265.39    | 863.08       | 6,317.98                | 0.69                    | 0.53                   | -0.45                 |
| 15,704.00             | 93.06           | 177.85      | 9,927.66              | -6,360.24    | 865.95       | 6,412.70                | 1.28                    | 0.94                   | -0.87                 |
| 15,798.00             | 94.01           | 177.65      | 9,921.86              | -6,453.99    | 869.64       | 6,506.39                | 1.03                    | 1.01                   | -0.21                 |
| 15,893.00             | 93.64           | 177.02      | 9,915.52              | -6,548.67    | 874.05       | 6,601.08                | 0.77                    | -0.39                  | -0.66                 |
| 15,988.00             | 92.50           | 177.68      | 9,910.44              | -6,643.43    | 878.43       | 6,695.85                | 1.39                    | -1.20                  | 0.69                  |
| 16,083.00             | 91.52           | 177.07      | 9,907.10              | -6,738.27    | 882.78       | 6,790.69                | 1.21                    | -1.03                  | -0.64                 |
| 16,177.00             | 89.62           | 176.36      | 9,906.17              | -6,832.11    | 888.17       | 6,884.63                | 2.16                    | -2.02                  | -0.76                 |
| 16,273.00             | 90.00           | 178.01      | 9,906.49              | -6,927.99    | 892.88       | 6,980.54                | 1.76                    | 0.40                   | 1.72                  |
| 16,367.00             | 90.16           | 177.71      | 9,906.36              | -7,021.92    | 896.39       | 7,074.40                | 0.36                    | 0.17                   | -0.32                 |
| 16,462.00             | 89.76           | 177.52      | 9,906.42              | -7,116.84    | 900.34       | 7,169.28                | 0.47                    | -0.42                  | -0.20                 |
| 16,557.00             | 89.90           | 177.76      | 9,906.70              | -7,211.76    | 904.25       | 7,264.16                | 0.29                    | 0.15                   | 0.25                  |
| 16,652.00             | 90.45           | 177.16      | 9,906.41              | -7,306.67    | 908.46       | 7,359.06                | 0.86                    | 0.58                   | -0.63                 |
| 16,747.00             | 90.62           | 176.25      | 9,905.53              | -7,401.50    | 913.92       | 7,454.00                | 0.97                    | 0.18                   | -0.96                 |
| 16,842.00             | 90.86           | 178.32      | 9,904.30              | -7,496.38    | 918.42       | 7,548.89                | 2.19                    | 0.25                   | 2.18                  |
| 16,937.00             | 91.31           | 178.51      | 9,902.50              | -7,591.33    | 921.05       | 7,643.68                | 0.51                    | 0.47                   | 0.20                  |
| 17,032.00             | 91.70           | 178.94      | 9,900.01              | -7,686.27    | 923.16       | 7,738.43                | 0.61                    | 0.41                   | 0.45                  |
| 17,126.00             | 91.00           | 178.91      | 9,897.79              | -7,780.23    | 924.93       | 7,832.15                | 0.75                    | -0.74                  | -0.03                 |



# Phoenix Technology Services LP

## Survey Report



**Company:** Chevron  
**Project:** Eddy County, NM (NAD27 NME)  
**Site:** HH SO 10 P3  
**Well:** #8H  
**Wellbore:** OH / Job #60836  
**Design:** Surveys (Patterson 270)

**Local Co-ordinate Reference:** Well #8H  
**TVD Reference:** GL + KB @ 3307.50usft (Patterson 270)  
**MD Reference:** GL + KB @ 3307.50usft (Patterson 270)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Compass 5000 GCR

### 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) |
|---------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 17,221.00                       | 89.66           | 178.21      | 9,897.24              | -7,875.20    | 927.32       | 7,926.94                | 1.59                    | -1.41                  | -0.74                 |
| 17,316.00                       | 89.90           | 178.55      | 9,897.61              | -7,970.16    | 930.00       | 8,021.75                | 0.44                    | 0.25                   | 0.36                  |
| 17,411.00                       | 90.20           | 178.46      | 9,897.53              | -8,065.13    | 932.48       | 8,116.55                | 0.33                    | 0.32                   | -0.09                 |
| 17,506.00                       | 90.65           | 178.81      | 9,896.82              | -8,160.10    | 934.74       | 8,211.33                | 0.60                    | 0.47                   | 0.37                  |
| 17,601.00                       | 91.03           | 178.72      | 9,895.43              | -8,255.06    | 936.79       | 8,306.09                | 0.41                    | 0.40                   | -0.09                 |
| 17,695.00                       | 91.07           | 179.45      | 9,893.71              | -8,349.03    | 938.29       | 8,399.81                | 0.78                    | 0.04                   | 0.78                  |
| 17,789.00                       | 90.66           | 179.14      | 9,892.29              | -8,443.02    | 939.45       | 8,493.50                | 0.55                    | -0.44                  | -0.33                 |
| 17,884.00                       | 90.07           | 178.93      | 9,891.68              | -8,538.00    | 941.05       | 8,588.24                | 0.66                    | -0.62                  | -0.22                 |
| 17,979.00                       | 87.86           | 175.71      | 9,893.40              | -8,632.86    | 945.49       | 8,683.11                | 4.11                    | -2.33                  | -3.39                 |
| 18,074.00                       | 87.63           | 177.20      | 9,897.14              | -8,727.60    | 951.36       | 8,777.99                | 1.59                    | -0.24                  | 1.57                  |
| 18,170.00                       | 87.96           | 177.16      | 9,900.83              | -8,823.42    | 956.08       | 8,873.83                | 0.35                    | 0.34                   | -0.04                 |
| 18,265.00                       | 89.86           | 179.53      | 9,902.64              | -8,918.35    | 958.82       | 8,968.62                | 3.20                    | 2.00                   | 2.49                  |
| 18,360.00                       | 90.00           | 180.87      | 9,902.75              | -9,013.35    | 958.49       | 9,063.19                | 1.42                    | 0.15                   | 1.41                  |
| 18,454.00                       | 89.74           | 179.48      | 9,902.97              | -9,107.34    | 958.20       | 9,156.77                | 1.50                    | -0.28                  | -1.48                 |
| 18,549.00                       | 90.69           | 179.99      | 9,902.61              | -9,202.34    | 958.64       | 9,251.41                | 1.13                    | 1.00                   | 0.54                  |
| 18,644.00                       | 91.45           | 178.70      | 9,900.84              | -9,297.31    | 959.72       | 9,346.09                | 1.58                    | 0.80                   | -1.36                 |
| 18,738.00                       | 92.01           | 177.68      | 9,898.00              | -9,391.22    | 962.69       | 9,439.88                | 1.24                    | 0.60                   | -1.09                 |
| 18,834.00                       | 92.52           | 177.53      | 9,894.20              | -9,487.06    | 966.70       | 9,535.69                | 0.55                    | 0.53                   | -0.16                 |
| 18,929.00                       | 92.80           | 180.13      | 9,889.79              | -9,581.93    | 968.64       | 9,630.34                | 2.75                    | 0.29                   | 2.74                  |
| 19,024.00                       | 92.13           | 181.64      | 9,885.71              | -9,676.83    | 967.17       | 9,724.71                | 1.74                    | -0.71                  | 1.59                  |
| 19,119.00                       | 92.99           | 181.65      | 9,881.47              | -9,771.70    | 964.45       | 9,818.93                | 0.91                    | 0.91                   | 0.01                  |
| 19,214.00                       | 93.30           | 180.96      | 9,876.25              | -9,866.53    | 962.29       | 9,913.17                | 0.80                    | 0.33                   | -0.73                 |
| 19,310.00                       | 93.75           | 180.14      | 9,870.35              | -9,962.34    | 961.37       | 10,008.50               | 0.97                    | 0.47                   | -0.85                 |
| 19,405.00                       | 92.29           | 178.30      | 9,865.35              | -10,057.19   | 962.66       | 10,103.07               | 2.47                    | -1.54                  | -1.94                 |
| 19,500.00                       | 92.47           | 178.66      | 9,861.40              | -10,152.08   | 965.18       | 10,197.79               | 0.42                    | 0.19                   | 0.38                  |
| 19,595.00                       | 91.26           | 179.40      | 9,858.31              | -10,247.01   | 966.78       | 10,292.48               | 1.49                    | -1.27                  | 0.78                  |
| 19,690.00                       | 91.04           | 178.41      | 9,856.40              | -10,341.97   | 968.60       | 10,387.21               | 1.07                    | -0.23                  | -1.04                 |
| 19,785.00                       | 91.41           | 177.67      | 9,854.37              | -10,436.90   | 971.85       | 10,482.03               | 0.87                    | 0.39                   | -0.78                 |
| 19,880.00                       | 90.68           | 178.40      | 9,852.64              | -10,531.82   | 975.10       | 10,576.86               | 1.09                    | -0.77                  | 0.77                  |
| 19,975.00                       | 89.81           | 177.38      | 9,852.23              | -10,626.76   | 978.60       | 10,671.72               | 1.41                    | -0.92                  | -1.07                 |
| 20,069.00                       | 90.09           | 176.20      | 9,852.31              | -10,720.61   | 983.87       | 10,765.66               | 1.29                    | 0.30                   | -1.26                 |
| 20,164.00                       | 89.43           | 175.06      | 9,852.71              | -10,815.33   | 991.10       | 10,860.64               | 1.39                    | -0.69                  | -1.20                 |
| 20,206.00                       | 90.26           | 175.19      | 9,852.83              | -10,857.17   | 994.67       | 10,902.64               | 1.99                    | 1.97                   | 0.31                  |
| <b>LTP/Hardline Crossing</b>    |                 |             |                       |              |              |                         |                         |                        |                       |
| 20,259.00                       | 91.30           | 175.35      | 9,852.11              | -10,909.99   | 999.04       | 10,955.64               | 1.99                    | 1.97                   | 0.31                  |
| 20,288.00                       | 90.64           | 174.96      | 9,851.62              | -10,938.88   | 1,001.49     | 10,984.63               | 2.64                    | -2.28                  | -1.34                 |
| <b>Final Phoenix MWD Survey</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 20,338.00                       | 90.64           | 174.96      | 9,851.06              | -10,988.68   | 1,005.89     | 11,034.63               | 0.00                    | 0.00                   | 0.00                  |
| <b>Projection to TD</b>         |                 |             |                       |              |              |                         |                         |                        |                       |



# Phoenix Technology Services LP

## Survey Report



|                  |                             |                                     |                                       |
|------------------|-----------------------------|-------------------------------------|---------------------------------------|
| <b>Company:</b>  | Chevron                     | <b>Local Co-ordinate Reference:</b> | Well #8H                              |
| <b>Project:</b>  | Eddy County, NM (NAD27 NME) | <b>TVD Reference:</b>               | GL + KB @ 3307.50usft (Patterson 270) |
| <b>Site:</b>     | HH SO 10 P3                 | <b>MD Reference:</b>                | GL + KB @ 3307.50usft (Patterson 270) |
| <b>Well:</b>     | #8H                         | <b>North Reference:</b>             | Grid                                  |
| <b>Wellbore:</b> | OH / Job #60836             | <b>Survey Calculation Method:</b>   | Minimum Curvature                     |
| <b>Design:</b>   | Surveys (Patterson 270)     | <b>Database:</b>                    | Compass 5000 GCR                      |

### Design Annotations

| Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Local Coordinates |                 | Comment                  |
|-----------------------------|-----------------------------|-------------------|-----------------|--------------------------|
|                             |                             | +N/-S<br>(usft)   | +E/-W<br>(usft) |                          |
| 612.00                      | 611.88                      | -2.94             | -9.90           | First Phoenix MWD Survey |
| 10,278.00                   | 9,896.66                    | -943.55           | 755.68          | FTP/Hardline Crossing    |
| 20,206.00                   | 9,852.83                    | -10,857.17        | 994.67          | LTP/Hardline Crossing    |
| 20,288.00                   | 9,851.62                    | -10,938.88        | 1,001.49        | Final Phoenix MWD Survey |
| 20,338.00                   | 9,851.06                    | -10,988.68        | 1,005.89        | Projection to TD         |