



Pro Directional  
Survey Report

NM OIL CONSERVATION  
ARTESIA DISTRICT  
JUN 12 2017  
PRODIRECTIONAL

Company: Marathon Oil  
Project: Eddy County, NM

Site: Fiddle Fee 24-28-23 (3-4-7-8)

Well: WD #7H

Wellbore: OH

Design: Prelim Plan A

Local Co-ordinate Reference:

TVD Reference:

MD Reference:

North Reference:

Survey Calculation Method:

Database:

Well WD #7H

Well @ 3023.00usft (GL: 2996' KB: 27'

(Precision582))

Well @ 3023.00usft (GL: 2996' KB: 27'

(Precision582))

Grid

Minimum Curvature

WellPlanner1

|             |                                      |               |                |
|-------------|--------------------------------------|---------------|----------------|
| Project     | Eddy County, NM                      |               |                |
| Map System: | US State Plane 1927 (Exact solution) | System Datum: | Mean Sea Level |
| Geo Datum:  | NAD 1927 (NADCON CONUS)              |               |                |
| Map Zone:   | New Mexico East 3001                 |               |                |

|                       |                               |                   |                 |
|-----------------------|-------------------------------|-------------------|-----------------|
| Site                  | Fiddle Fee 24-28-23 (3-4-7-8) |                   |                 |
| Site Position:        |                               | Northing:         | 438,692.25 usft |
| From:                 | Map                           | Easting:          | 582,820.53 usft |
| Position Uncertainty: | 0.00 usft                     | Slot Radius:      | 13-3/16 "       |
|                       |                               | Latitude:         | 32.205799       |
|                       |                               | Longitude:        | -104.065567     |
|                       |                               | Grid Convergence: | 0.14 °          |

|                      |           |                     |               |
|----------------------|-----------|---------------------|---------------|
| Well                 | WD #7H    |                     |               |
| Well Position        | +N/-S     | 0.00 usft           | Northing:     |
|                      | +E/-W     | 0.00 usft           | Easting:      |
| Position Uncertainty | 0.00 usft | Wellhead Elevation: | usft          |
|                      |           | Latitude:           | 32.205964     |
|                      |           | Longitude:          | -104.065566   |
|                      |           | Ground Level:       | 2,996.00 usft |

|           |            |             |                |
|-----------|------------|-------------|----------------|
| Wellbore  | OH         |             |                |
| Magnetics | Model Name | Sample Date | Declination    |
|           |            |             | (°)            |
|           | HDGM       | 6/8/2018    | 7.18           |
|           |            |             | Dip Angle      |
|           |            |             | (°)            |
|           |            |             | 59.98          |
|           |            |             | Field Strength |
|           |            |             | (nT)           |
|           |            |             | 47,991.60      |

|                   |                  |        |               |
|-------------------|------------------|--------|---------------|
| Design            | Prelim Plan A    |        |               |
| Audit Notes:      |                  |        |               |
| Version:          | Phase:           | PLAN   | Tie On Depth: |
|                   |                  |        | 0.00          |
| Vertical Section: | Depth From (TVD) | +N/-S  | +E/-W         |
|                   | (usft)           | (usft) | (usft)        |
|                   | 0.00             | 0.00   | 0.00          |
|                   |                  |        | Direction     |
|                   |                  |        | (°)           |
|                   |                  |        | 90.79         |

|                     |                |                    |                 |
|---------------------|----------------|--------------------|-----------------|
| Survey Tool Program | Date 6/11/2018 |                    |                 |
| From                | To             | Survey (Wellbore)  | Tool Name       |
| (usft)              | (usft)         |                    |                 |
| 0.00                | 1,850.00       | Prelim Plan A (OH) | MWD+IFR1        |
| 1,850.00            | 5,400.00       | Prelim Plan A (OH) | MWD+IFR1        |
| 5,400.00            | 10,000.00      | Prelim Plan A (OH) | MWD+IFR1        |
| 10,000.00           | 15,154.62      | Prelim Plan A (OH) | MWD+IFR1        |
|                     |                |                    | Description     |
|                     |                |                    | OWSG MWD + IFR1 |
|                     |                |                    | OWSG MWD + IFR1 |
|                     |                |                    | OWSG MWD + IFR1 |
|                     |                |                    | OWSG MWD + IFR1 |

|                |             |         |          |        |        |          |             |             |             |  |
|----------------|-------------|---------|----------|--------|--------|----------|-------------|-------------|-------------|--|
| Planned Survey |             |         |          |        |        |          |             |             |             |  |
| Measured       | Inclination | Azimuth | Vertical | +N/-S  | +E/-W  | Vertical | Dogleg      | Build       | Turn        |  |
| Depth          | (°)         | (°)     | Depth    | (usft) | (usft) | Section  | Rate        | Rate        | Rate        |  |
| (usft)         |             |         | (usft)   |        |        | (usft)   | (°/100usft) | (°/100usft) | (°/100usft) |  |
| 0.00           | 0.00        | 0.00    | 0.00     | 0.00   | 0.00   | 0.00     | 0.00        | 0.00        | 0.00        |  |
| 100.00         | 0.00        | 0.00    | 100.00   | 0.00   | 0.00   | 0.00     | 0.00        | 0.00        | 0.00        |  |
| 200.00         | 0.00        | 0.00    | 200.00   | 0.00   | 0.00   | 0.00     | 0.00        | 0.00        | 0.00        |  |
| 300.00         | 0.00        | 0.00    | 300.00   | 0.00   | 0.00   | 0.00     | 0.00        | 0.00        | 0.00        |  |
| 400.00         | 0.00        | 0.00    | 400.00   | 0.00   | 0.00   | 0.00     | 0.00        | 0.00        | 0.00        |  |
| 500.00         | 0.00        | 0.00    | 500.00   | 0.00   | 0.00   | 0.00     | 0.00        | 0.00        | 0.00        |  |

**Company:** Marathon Oil  
**Project:** Eddy County, NM  
**Site:** Fiddle Fee 24-28-23 (3-4-7-8)  
**Well:** WD #7H  
**Wellbore:** OH  
**Design:** Prelim Plan A

**Local Co-ordinate Reference:** Well WD #7H  
**TVD Reference:** Well @ 3023.00usft (GL: 2996' KB: 27' (Precision582))  
**MD Reference:** Well @ 3023.00usft (GL: 2996' KB: 27' (Precision582))  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** WellPlanner1

### Planned 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) |
|-----------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|
| 600.00                      | 1.00               | 352.99         | 599.99                      | 0.87            | -0.11           | -0.12                         | 1.00                          | 1.00                         | 0.00                        |
| 700.00                      | 2.00               | 352.99         | 699.96                      | 3.46            | -0.43           | -0.47                         | 1.00                          | 1.00                         | 0.00                        |
| 800.00                      | 4.00               | 352.99         | 799.82                      | 8.66            | -1.06           | -1.18                         | 2.00                          | 2.00                         | 0.00                        |
| 900.00                      | 6.00               | 352.99         | 899.43                      | 17.31           | -2.13           | -2.37                         | 2.00                          | 2.00                         | 0.00                        |
| 1,000.00                    | 8.00               | 352.99         | 998.68                      | 29.40           | -3.62           | -4.02                         | 2.00                          | 2.00                         | 0.00                        |
| 1,100.00                    | 10.00              | 352.99         | 1,097.45                    | 44.93           | -5.52           | -6.14                         | 2.00                          | 2.00                         | 0.00                        |
| 1,200.00                    | 12.00              | 352.99         | 1,195.60                    | 63.87           | -7.85           | -8.73                         | 2.00                          | 2.00                         | 0.00                        |
| 1,299.84                    | 14.00              | 352.99         | 1,292.88                    | 86.15           | -10.59          | -11.78                        | 2.00                          | 2.00                         | 0.00                        |
| 1,400.00                    | 14.00              | 352.99         | 1,390.07                    | 110.20          | -13.55          | -15.07                        | 0.00                          | 0.00                         | 0.00                        |
| 1,500.00                    | 14.00              | 352.99         | 1,487.10                    | 134.20          | -16.50          | -18.35                        | 0.00                          | 0.00                         | 0.00                        |
| 1,600.00                    | 14.00              | 352.99         | 1,584.13                    | 158.21          | -19.45          | -21.63                        | 0.00                          | 0.00                         | 0.00                        |
| 1,700.00                    | 14.00              | 352.99         | 1,681.16                    | 182.22          | -22.40          | -24.91                        | 0.00                          | 0.00                         | 0.00                        |
| 1,800.00                    | 14.00              | 352.99         | 1,778.19                    | 206.22          | -25.36          | -28.20                        | 0.00                          | 0.00                         | 0.00                        |
| 1,900.00                    | 14.00              | 352.99         | 1,875.22                    | 230.23          | -28.31          | -31.48                        | 0.00                          | 0.00                         | 0.00                        |
| 2,000.00                    | 14.00              | 352.99         | 1,972.25                    | 254.23          | -31.26          | -34.76                        | 0.00                          | 0.00                         | 0.00                        |
| 2,100.00                    | 14.00              | 352.99         | 2,069.28                    | 278.24          | -34.21          | -38.04                        | 0.00                          | 0.00                         | 0.00                        |
| 2,200.00                    | 14.00              | 352.99         | 2,166.31                    | 302.25          | -37.16          | -41.33                        | 0.00                          | 0.00                         | 0.00                        |
| 2,300.00                    | 14.00              | 352.99         | 2,263.34                    | 326.25          | -40.11          | -44.61                        | 0.00                          | 0.00                         | 0.00                        |
| 2,400.00                    | 14.00              | 352.99         | 2,360.38                    | 350.26          | -43.06          | -47.89                        | 0.00                          | 0.00                         | 0.00                        |
| 2,500.00                    | 14.00              | 352.99         | 2,457.41                    | 374.26          | -46.02          | -51.17                        | 0.00                          | 0.00                         | 0.00                        |
| 2,600.00                    | 14.00              | 352.99         | 2,554.44                    | 398.27          | -48.97          | -54.45                        | 0.00                          | 0.00                         | 0.00                        |
| 2,700.00                    | 14.00              | 352.99         | 2,651.47                    | 422.28          | -51.92          | -57.74                        | 0.00                          | 0.00                         | 0.00                        |
| 2,800.00                    | 14.00              | 352.99         | 2,748.50                    | 446.28          | -54.87          | -61.02                        | 0.00                          | 0.00                         | 0.00                        |
| 2,900.00                    | 14.00              | 352.99         | 2,845.53                    | 470.29          | -57.82          | -64.30                        | 0.00                          | 0.00                         | 0.00                        |
| 3,000.00                    | 14.00              | 352.99         | 2,942.56                    | 494.29          | -60.77          | -67.58                        | 0.00                          | 0.00                         | 0.00                        |
| 3,100.00                    | 14.00              | 352.99         | 3,039.59                    | 518.30          | -63.73          | -70.87                        | 0.00                          | 0.00                         | 0.00                        |
| 3,200.00                    | 14.00              | 352.99         | 3,136.62                    | 542.31          | -66.68          | -74.15                        | 0.00                          | 0.00                         | 0.00                        |
| 3,300.00                    | 14.00              | 352.99         | 3,233.65                    | 566.31          | -69.63          | -77.43                        | 0.00                          | 0.00                         | 0.00                        |
| 3,400.00                    | 14.00              | 352.99         | 3,330.68                    | 590.32          | -72.58          | -80.71                        | 0.00                          | 0.00                         | 0.00                        |
| 3,500.00                    | 14.00              | 352.99         | 3,427.72                    | 614.32          | -75.53          | -83.99                        | 0.00                          | 0.00                         | 0.00                        |
| 3,600.00                    | 14.00              | 352.99         | 3,524.75                    | 638.33          | -78.48          | -87.28                        | 0.00                          | 0.00                         | 0.00                        |
| 3,700.00                    | 14.00              | 352.99         | 3,621.78                    | 662.34          | -81.43          | -90.56                        | 0.00                          | 0.00                         | 0.00                        |
| 3,800.00                    | 14.00              | 352.99         | 3,718.81                    | 686.34          | -84.39          | -93.84                        | 0.00                          | 0.00                         | 0.00                        |
| 3,900.00                    | 14.00              | 352.99         | 3,815.84                    | 710.35          | -87.34          | -97.12                        | 0.00                          | 0.00                         | 0.00                        |
| 4,000.00                    | 14.00              | 352.99         | 3,912.87                    | 734.35          | -90.29          | -100.41                       | 0.00                          | 0.00                         | 0.00                        |
| 4,100.00                    | 14.00              | 352.99         | 4,009.90                    | 758.36          | -93.24          | -103.69                       | 0.00                          | 0.00                         | 0.00                        |
| 4,200.00                    | 14.00              | 352.99         | 4,106.93                    | 782.37          | -96.19          | -106.97                       | 0.00                          | 0.00                         | 0.00                        |
| 4,300.00                    | 14.00              | 352.99         | 4,203.96                    | 806.37          | -99.14          | -110.25                       | 0.00                          | 0.00                         | 0.00                        |
| 4,400.00                    | 14.00              | 352.99         | 4,300.99                    | 830.38          | -102.10         | -113.53                       | 0.00                          | 0.00                         | 0.00                        |
| 4,500.00                    | 14.00              | 352.99         | 4,398.02                    | 854.38          | -105.05         | -116.82                       | 0.00                          | 0.00                         | 0.00                        |
| 4,600.00                    | 14.00              | 352.99         | 4,495.06                    | 878.39          | -108.00         | -120.10                       | 0.00                          | 0.00                         | 0.00                        |
| 4,700.00                    | 14.00              | 352.99         | 4,592.09                    | 902.40          | -110.95         | -123.38                       | 0.00                          | 0.00                         | 0.00                        |



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Planned 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) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 4,800.00              | 14.00           | 352.99      | 4,689.12              | 926.40       | -113.90      | -126.66                 | 0.00                    | 0.00                   | 0.00                  |
| 4,900.00              | 14.00           | 352.99      | 4,786.15              | 950.41       | -116.85      | -129.95                 | 0.00                    | 0.00                   | 0.00                  |
| 5,000.00              | 14.00           | 352.99      | 4,883.18              | 974.41       | -119.80      | -133.23                 | 0.00                    | 0.00                   | 0.00                  |
| 5,100.00              | 14.00           | 352.99      | 4,980.21              | 998.42       | -122.76      | -136.51                 | 0.00                    | 0.00                   | 0.00                  |
| 5,200.00              | 14.00           | 352.99      | 5,077.24              | 1,022.43     | -125.71      | -139.79                 | 0.00                    | 0.00                   | 0.00                  |
| 5,300.00              | 14.00           | 352.99      | 5,174.27              | 1,046.43     | -128.66      | -143.08                 | 0.00                    | 0.00                   | 0.00                  |
| 5,400.00              | 14.00           | 352.99      | 5,271.30              | 1,070.44     | -131.61      | -146.36                 | 0.00                    | 0.00                   | 0.00                  |
| 5,500.00              | 14.00           | 352.99      | 5,368.33              | 1,094.44     | -134.56      | -149.64                 | 0.00                    | 0.00                   | 0.00                  |
| 5,600.00              | 14.00           | 352.99      | 5,465.37              | 1,118.45     | -137.51      | -152.92                 | 0.00                    | 0.00                   | 0.00                  |
| 5,671.35              | 14.00           | 352.99      | 5,534.60              | 1,135.58     | -139.62      | -155.26                 | 0.00                    | 0.00                   | 0.00                  |
| 5,700.00              | 13.42           | 352.99      | 5,562.43              | 1,142.32     | -140.45      | -156.19                 | 2.00                    | -2.00                  | 0.00                  |
| 5,800.00              | 11.42           | 352.99      | 5,660.08              | 1,163.67     | -143.07      | -159.10                 | 2.00                    | -2.00                  | 0.00                  |
| 5,900.00              | 9.42            | 352.99      | 5,758.43              | 1,181.63     | -145.28      | -161.56                 | 2.00                    | -2.00                  | 0.00                  |
| 6,000.00              | 7.42            | 352.99      | 5,857.34              | 1,196.17     | -147.07      | -163.55                 | 2.00                    | -2.00                  | 0.00                  |
| 6,100.00              | 5.42            | 352.99      | 5,956.71              | 1,207.27     | -148.43      | -165.07                 | 2.00                    | -2.00                  | 0.00                  |
| 6,200.00              | 3.42            | 352.99      | 6,056.41              | 1,214.92     | -149.38      | -166.11                 | 2.00                    | -2.00                  | 0.00                  |
| 6,300.00              | 1.42            | 352.99      | 6,156.31              | 1,219.12     | -149.89      | -166.69                 | 2.00                    | -2.00                  | 0.00                  |
| 6,371.19              | 0.00            | 0.00        | 6,227.50              | 1,220.00     | -150.00      | -166.81                 | 2.00                    | -2.00                  | 0.00                  |
| 6,400.00              | 0.00            | 0.00        | 6,256.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 6,500.00              | 0.00            | 0.00        | 6,356.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 6,600.00              | 0.00            | 0.00        | 6,456.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 6,700.00              | 0.00            | 0.00        | 6,556.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 6,800.00              | 0.00            | 0.00        | 6,656.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 6,900.00              | 0.00            | 0.00        | 6,756.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 7,000.00              | 0.00            | 0.00        | 6,856.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 7,100.00              | 0.00            | 0.00        | 6,956.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 7,200.00              | 0.00            | 0.00        | 7,056.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 7,300.00              | 0.00            | 0.00        | 7,156.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 7,400.00              | 0.00            | 0.00        | 7,256.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 7,500.00              | 0.00            | 0.00        | 7,356.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 7,600.00              | 0.00            | 0.00        | 7,456.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 7,700.00              | 0.00            | 0.00        | 7,556.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 7,800.00              | 0.00            | 0.00        | 7,656.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 7,900.00              | 0.00            | 0.00        | 7,756.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 8,000.00              | 0.00            | 0.00        | 7,856.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 8,100.00              | 0.00            | 0.00        | 7,956.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 8,200.00              | 0.00            | 0.00        | 8,056.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 8,300.00              | 0.00            | 0.00        | 8,156.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 8,400.00              | 0.00            | 0.00        | 8,256.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 8,500.00              | 0.00            | 0.00        | 8,356.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 8,600.00              | 0.00            | 0.00        | 8,456.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 8,700.00              | 0.00            | 0.00        | 8,556.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |

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**Wellbore:** OH  
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**TVD Reference:** Well @ 3023.00usft (GL: 2996' KB: 27' (Precision582))  
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### Planned Survey

| Measured Depth (usft)    | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|--------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 8,800.00                 | 0.00            | 0.00        | 8,656.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 8,900.00                 | 0.00            | 0.00        | 8,756.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 9,000.00                 | 0.00            | 0.00        | 8,856.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 9,100.00                 | 0.00            | 0.00        | 8,956.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 9,200.00                 | 0.00            | 0.00        | 9,056.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 9,300.00                 | 0.00            | 0.00        | 9,156.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 9,400.00                 | 0.00            | 0.00        | 9,256.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 9,500.00                 | 0.00            | 0.00        | 9,356.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 9,600.00                 | 0.00            | 0.00        | 9,456.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 9,700.00                 | 0.00            | 0.00        | 9,556.31              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 9,803.19                 | 0.00            | 0.00        | 9,659.50              | 1,220.00     | -150.00      | -166.81                 | 0.00                    | 0.00                   | 0.00                  |
| 9,850.00                 | 4.68            | 79.80       | 9,706.25              | 1,220.34     | -148.12      | -164.93                 | 10.00                   | 10.00                  | 0.00                  |
| 9,900.00                 | 9.68            | 79.80       | 9,755.85              | 1,221.44     | -141.97      | -158.80                 | 10.00                   | 10.00                  | 0.00                  |
| 9,950.00                 | 14.68           | 79.80       | 9,804.71              | 1,223.31     | -131.59      | -148.44                 | 10.00                   | 10.00                  | 0.00                  |
| 10,000.00                | 19.68           | 79.80       | 9,852.46              | 1,225.93     | -117.06      | -133.95                 | 10.00                   | 10.00                  | 0.00                  |
| 10,050.00                | 24.68           | 79.80       | 9,898.74              | 1,229.27     | -98.49       | -115.43                 | 10.00                   | 10.00                  | 0.00                  |
| 10,100.00                | 29.68           | 79.80       | 9,943.21              | 1,233.31     | -76.02       | -93.01                  | 10.00                   | 10.00                  | 0.00                  |
| 10,150.00                | 34.68           | 79.80       | 9,985.51              | 1,238.03     | -49.82       | -66.88                  | 10.00                   | 10.00                  | 0.00                  |
| 10,200.00                | 39.68           | 79.80       | 10,025.34             | 1,243.38     | -20.09       | -37.23                  | 10.00                   | 10.00                  | 0.00                  |
| 10,220.79                | 41.76           | 79.80       | 10,041.09             | 1,245.78     | -6.74        | -23.91                  | 10.00                   | 10.00                  | 0.00                  |
| <b>[FiddleFee#7H]FTP</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 10,250.00                | 44.68           | 79.80       | 10,062.38             | 1,249.32     | 12.95        | -4.28                   | 10.00                   | 10.00                  | 0.00                  |
| 10,300.00                | 49.68           | 79.80       | 10,096.35             | 1,255.81     | 49.03        | 31.71                   | 10.00                   | 10.00                  | 0.00                  |
| 10,350.00                | 54.68           | 79.80       | 10,127.00             | 1,262.80     | 87.89        | 70.47                   | 10.00                   | 10.00                  | 0.00                  |
| 10,400.00                | 59.68           | 79.80       | 10,154.09             | 1,270.24     | 129.23       | 111.71                  | 10.00                   | 10.00                  | 0.00                  |
| 10,450.00                | 64.68           | 79.80       | 10,177.42             | 1,278.07     | 172.74       | 155.10                  | 10.00                   | 10.00                  | 0.00                  |
| 10,500.00                | 69.68           | 79.80       | 10,196.80             | 1,286.23     | 218.09       | 200.33                  | 10.00                   | 10.00                  | 0.00                  |
| 10,550.00                | 74.68           | 79.80       | 10,212.10             | 1,294.66     | 264.92       | 247.04                  | 10.00                   | 10.00                  | 0.00                  |
| 10,600.00                | 79.68           | 79.80       | 10,223.19             | 1,303.29     | 312.89       | 294.89                  | 10.00                   | 10.00                  | 0.00                  |
| 10,650.00                | 84.68           | 79.80       | 10,229.99             | 1,312.06     | 361.62       | 343.50                  | 10.00                   | 10.00                  | 0.00                  |
| 10,691.19                | 88.80           | 79.80       | 10,232.33             | 1,319.34     | 402.09       | 383.86                  | 10.00                   | 10.00                  | 0.00                  |
| 10,700.00                | 88.80           | 80.06       | 10,232.52             | 1,320.88     | 410.76       | 392.51                  | 3.00                    | 0.00                   | 3.00                  |
| 10,800.00                | 88.80           | 83.06       | 10,234.61             | 1,335.54     | 509.65       | 491.18                  | 3.00                    | 0.00                   | 3.00                  |
| 10,900.00                | 88.80           | 86.07       | 10,236.71             | 1,345.01     | 609.16       | 590.56                  | 3.00                    | 0.00                   | 3.00                  |
| 11,000.00                | 88.80           | 89.07       | 10,238.81             | 1,349.25     | 709.04       | 690.37                  | 3.00                    | 0.00                   | 3.00                  |
| 11,057.15                | 88.80           | 90.78       | 10,240.00             | 1,349.33     | 766.18       | 747.50                  | 3.00                    | 0.01                   | 3.00                  |
| 11,100.00                | 88.80           | 90.78       | 10,240.90             | 1,348.75     | 809.01       | 790.34                  | 0.00                    | 0.00                   | 0.00                  |
| 11,200.00                | 88.80           | 90.78       | 10,242.98             | 1,347.38     | 908.98       | 890.32                  | 0.00                    | 0.00                   | 0.00                  |
| 11,300.00                | 88.80           | 90.78       | 10,245.07             | 1,346.02     | 1,008.95     | 990.30                  | 0.00                    | 0.00                   | 0.00                  |
| 11,400.00                | 88.80           | 90.78       | 10,247.16             | 1,344.66     | 1,108.92     | 1,090.27                | 0.00                    | 0.00                   | 0.00                  |
| 11,500.00                | 88.80           | 90.78       | 10,249.24             | 1,343.29     | 1,208.89     | 1,190.25                | 0.00                    | 0.00                   | 0.00                  |
| 11,600.00                | 88.80           | 90.78       | 10,251.33             | 1,341.93     | 1,308.86     | 1,290.23                | 0.00                    | 0.00                   | 0.00                  |

**Company:** Marathon Oil  
**Project:** Eddy County, NM  
**Site:** Fiddle Fee 24-28-23 (3-4-7-8)  
**Well:** WD #7H  
**Wellbore:** OH  
**Design:** Prelim Plan A

**Local Co-ordinate Reference:** Well WD #7H  
**TVD Reference:** Well @ 3023.00usft (GL: 2996' KB: 27' (Precision582))  
**MD Reference:** Well @ 3023.00usft (GL: 2996' KB: 27' (Precision582))  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** WellPlanner1

### Planned 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) |
|-----------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|
| 11,700.00                   | 88.80              | 90.78          | 10,253.41                   | 1,340.57        | 1,408.83        | 1,390.21                      | 0.00                          | 0.00                         | 0.00                        |
| 11,800.00                   | 88.80              | 90.78          | 10,255.50                   | 1,339.21        | 1,508.80        | 1,490.19                      | 0.00                          | 0.00                         | 0.00                        |
| 11,900.00                   | 88.80              | 90.78          | 10,257.58                   | 1,337.84        | 1,608.76        | 1,590.17                      | 0.00                          | 0.00                         | 0.00                        |
| 12,000.00                   | 88.80              | 90.78          | 10,259.67                   | 1,336.48        | 1,708.73        | 1,690.14                      | 0.00                          | 0.00                         | 0.00                        |
| 12,100.00                   | 88.80              | 90.78          | 10,261.76                   | 1,335.12        | 1,808.70        | 1,790.12                      | 0.00                          | 0.00                         | 0.00                        |
| 12,200.00                   | 88.80              | 90.78          | 10,263.84                   | 1,333.75        | 1,908.67        | 1,890.10                      | 0.00                          | 0.00                         | 0.00                        |
| 12,300.00                   | 88.80              | 90.78          | 10,265.93                   | 1,332.39        | 2,008.64        | 1,990.08                      | 0.00                          | 0.00                         | 0.00                        |
| 12,400.00                   | 88.80              | 90.78          | 10,268.01                   | 1,331.03        | 2,108.61        | 2,090.06                      | 0.00                          | 0.00                         | 0.00                        |
| 12,500.00                   | 88.80              | 90.78          | 10,270.10                   | 1,329.66        | 2,208.58        | 2,190.04                      | 0.00                          | 0.00                         | 0.00                        |
| 12,600.00                   | 88.80              | 90.78          | 10,272.19                   | 1,328.30        | 2,308.55        | 2,290.01                      | 0.00                          | 0.00                         | 0.00                        |
| 12,700.00                   | 88.80              | 90.78          | 10,274.27                   | 1,326.94        | 2,408.52        | 2,389.99                      | 0.00                          | 0.00                         | 0.00                        |
| 12,800.00                   | 88.80              | 90.78          | 10,276.36                   | 1,325.57        | 2,508.48        | 2,489.97                      | 0.00                          | 0.00                         | 0.00                        |
| 12,900.00                   | 88.80              | 90.78          | 10,278.44                   | 1,324.21        | 2,608.45        | 2,589.95                      | 0.00                          | 0.00                         | 0.00                        |
| 13,000.00                   | 88.80              | 90.78          | 10,280.53                   | 1,322.85        | 2,708.42        | 2,689.93                      | 0.00                          | 0.00                         | 0.00                        |
| 13,100.00                   | 88.80              | 90.78          | 10,282.61                   | 1,321.49        | 2,808.39        | 2,789.90                      | 0.00                          | 0.00                         | 0.00                        |
| 13,200.00                   | 88.80              | 90.78          | 10,284.70                   | 1,320.12        | 2,908.36        | 2,889.88                      | 0.00                          | 0.00                         | 0.00                        |
| 13,300.00                   | 88.80              | 90.78          | 10,286.79                   | 1,318.76        | 3,008.33        | 2,989.86                      | 0.00                          | 0.00                         | 0.00                        |
| 13,400.00                   | 88.80              | 90.78          | 10,288.87                   | 1,317.40        | 3,108.30        | 3,089.84                      | 0.00                          | 0.00                         | 0.00                        |
| 13,500.00                   | 88.80              | 90.78          | 10,290.96                   | 1,316.03        | 3,208.27        | 3,189.82                      | 0.00                          | 0.00                         | 0.00                        |
| 13,600.00                   | 88.80              | 90.78          | 10,293.04                   | 1,314.67        | 3,308.24        | 3,289.80                      | 0.00                          | 0.00                         | 0.00                        |
| 13,700.00                   | 88.80              | 90.78          | 10,295.13                   | 1,313.31        | 3,408.21        | 3,389.77                      | 0.00                          | 0.00                         | 0.00                        |
| 13,800.00                   | 88.80              | 90.78          | 10,297.22                   | 1,311.94        | 3,508.17        | 3,489.75                      | 0.00                          | 0.00                         | 0.00                        |
| 13,900.00                   | 88.80              | 90.78          | 10,299.30                   | 1,310.58        | 3,608.14        | 3,589.73                      | 0.00                          | 0.00                         | 0.00                        |
| 14,000.00                   | 88.80              | 90.78          | 10,301.39                   | 1,309.22        | 3,708.11        | 3,689.71                      | 0.00                          | 0.00                         | 0.00                        |
| 14,100.00                   | 88.80              | 90.78          | 10,303.47                   | 1,307.86        | 3,808.08        | 3,789.69                      | 0.00                          | 0.00                         | 0.00                        |
| 14,200.00                   | 88.80              | 90.78          | 10,305.56                   | 1,306.49        | 3,908.05        | 3,889.67                      | 0.00                          | 0.00                         | 0.00                        |
| 14,300.00                   | 88.80              | 90.78          | 10,307.64                   | 1,305.13        | 4,008.02        | 3,989.64                      | 0.00                          | 0.00                         | 0.00                        |
| 14,400.00                   | 88.80              | 90.78          | 10,309.73                   | 1,303.77        | 4,107.99        | 4,089.62                      | 0.00                          | 0.00                         | 0.00                        |
| 14,500.00                   | 88.80              | 90.78          | 10,311.82                   | 1,302.40        | 4,207.96        | 4,189.60                      | 0.00                          | 0.00                         | 0.00                        |
| 14,600.00                   | 88.80              | 90.78          | 10,313.90                   | 1,301.04        | 4,307.93        | 4,289.58                      | 0.00                          | 0.00                         | 0.00                        |
| 14,700.00                   | 88.80              | 90.78          | 10,315.99                   | 1,299.68        | 4,407.90        | 4,389.56                      | 0.00                          | 0.00                         | 0.00                        |
| 14,800.00                   | 88.80              | 90.78          | 10,318.07                   | 1,298.31        | 4,507.86        | 4,489.53                      | 0.00                          | 0.00                         | 0.00                        |
| 14,900.00                   | 88.80              | 90.78          | 10,320.16                   | 1,296.95        | 4,607.83        | 4,589.51                      | 0.00                          | 0.00                         | 0.00                        |
| 15,000.00                   | 88.80              | 90.78          | 10,322.25                   | 1,295.59        | 4,707.80        | 4,689.49                      | 0.00                          | 0.00                         | 0.00                        |
| 15,100.00                   | 88.80              | 90.78          | 10,324.33                   | 1,294.22        | 4,807.77        | 4,789.47                      | 0.00                          | 0.00                         | 0.00                        |
| 15,154.62                   | 88.80              | 90.78          | 10,325.47                   | 1,293.48        | 4,862.37        | 4,844.07                      | 0.00                          | 0.00                         | 0.00                        |

[FiddleFee#7H]LTP/BHL



# Marathon Oil

## Pro Directional Survey Report



|                  |                               |                                     |                                                       |
|------------------|-------------------------------|-------------------------------------|-------------------------------------------------------|
| <b>Company:</b>  | Marathon Oil                  | <b>Local Co-ordinate Reference:</b> | Well WD #7H                                           |
| <b>Project:</b>  | Eddy County, NM               | <b>TVD Reference:</b>               | Well @ 3023.00usft (GL: 2996' KB: 27' (Precision582)) |
| <b>Site:</b>     | Fiddle Fee 24-28-23 (3-4-7-8) | <b>MD Reference:</b>                | Well @ 3023.00usft (GL: 2996' KB: 27' (Precision582)) |
| <b>Well:</b>     | WD #7H                        | <b>North Reference:</b>             | Grid                                                  |
| <b>Wellbore:</b> | OH                            | <b>Survey Calculation Method:</b>   | Minimum Curvature                                     |
| <b>Design:</b>   | Prelim Plan A                 | <b>Database:</b>                    | WellPlanner1                                          |

| Design Targets                                                                                  |           |          |               |          |          |            |            |           |             |
|-------------------------------------------------------------------------------------------------|-----------|----------|---------------|----------|----------|------------|------------|-----------|-------------|
| Target Name                                                                                     | Dip Angle | Dip Dir. | TVD           | +N/-S    | +E/-W    | Northing   | Easting    | Latitude  | Longitude   |
| - hit/miss target                                                                               | (°)       | (°)      | (usft)        | (usft)   | (usft)   | (usft)     | (usft)     |           |             |
| - Shape                                                                                         |           |          |               |          |          |            |            |           |             |
| [FiddleFee#7H]FTP                                                                               | 0.00      | 0.00     | 10,000.0<br>0 | 1,360.57 | 18.69    | 440,112.82 | 582,839.22 | 32.209704 | -104.065495 |
| - plan misses target center by 124.55usft at 10219.23usft MD (10039.93 TVD, 1245.59 N, -7.76 E) |           |          |               |          |          |            |            |           |             |
| - Point                                                                                         |           |          |               |          |          |            |            |           |             |
| [FiddleFee#7H]LTP/BHL                                                                           | 0.00      | 0.00     | 10,325.4<br>7 | 1,293.48 | 4,862.37 | 440,045.73 | 587,682.90 | 32.209485 | -104.049835 |
| - plan hits target center                                                                       |           |          |               |          |          |            |            |           |             |
| - Point                                                                                         |           |          |               |          |          |            |            |           |             |

|                   |                    |             |
|-------------------|--------------------|-------------|
| Checked By: _____ | Approved By: _____ | Date: _____ |
|-------------------|--------------------|-------------|

Marathon Oil  
Eddy County, NM  
Fiddle Fee 24-28-23 (3-4-7-8)  
WD #7H  
Prelim Plan A  
GL: 2996' KB: 27' (Precision582)

US State Plane 1927 (Exact solution)  
NAD 1982 (NADCON CONUS)  
Clarke 1866  
New Mexico East 3001  
Mean Sea Level

SECTION DETAILS

| Sec | MD       | Inc   | Azi    | TVD      | +N/-S   | +E/-W   | Dieg  | Vsect   |
|-----|----------|-------|--------|----------|---------|---------|-------|---------|
| 1   | 0.00     | 0.00  | 0.00   | 0.00     | 0.00    | 0.00    | 0.00  | 0.00    |
| 2   | 500.00   | 0.00  | 0.00   | 500.00   | 0.00    | 0.00    | 0.00  | 0.00    |
| 3   | 700.00   | 2.00  | 352.99 | 699.96   | 3.46    | -0.43   | 1.00  | -0.47   |
| 4   | 1299.84  | 14.00 | 352.99 | 1292.88  | 86.15   | -10.59  | 2.00  | -11.78  |
| 5   | 5671.35  | 14.00 | 352.99 | 5534.60  | 1135.58 | -139.62 | 0.00  | -155.26 |
| 6   | 6371.19  | 0.00  | 0.00   | 6227.50  | 1220.00 | -150.00 | 2.00  | -166.81 |
| 7   | 9803.19  | 0.00  | 0.00   | 9659.50  | 1220.00 | -150.00 | 0.00  | -166.81 |
| 8   | 10691.19 | 88.80 | 79.80  | 10232.33 | 1319.34 | 402.09  | 10.00 | 363.86  |
| 9   | 11057.15 | 88.80 | 90.78  | 10240.00 | 1349.33 | 766.18  | 3.00  | 747.50  |
| 10  | 15154.62 | 88.80 | 90.78  | 10325.47 | 1293.48 | 4862.37 | 0.00  | 4844.07 |

RKB Elevation: Well @ 3023.00usft (GL: 2996' KB: 27' (Precision582))

| +N/-S | +E/-W | Northing  | Easting   | Latitude  | Longitude   | Slot |
|-------|-------|-----------|-----------|-----------|-------------|------|
| 0.00  | 0.00  | 438752.25 | 582620.53 | 32.205963 | -104.065566 |      |

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

| Name                  | TVD      | +N/-S   | +E/-W   | Northing  | Easting   |
|-----------------------|----------|---------|---------|-----------|-----------|
| [FiddleFee#7H]FTP     | 10000.00 | 1360.57 | 18.69   | 440112.82 | 582839.22 |
| [FiddleFee#7H]LTP/BHL | 10325.47 | 1293.48 | 4862.37 | 440045.73 | 587682.90 |

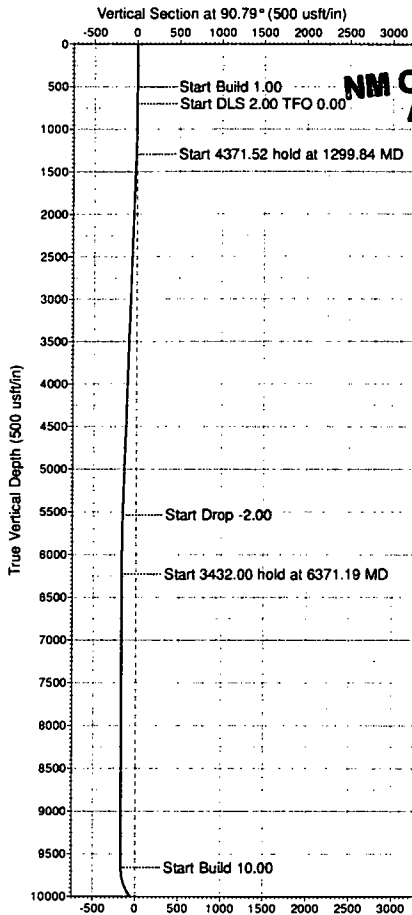
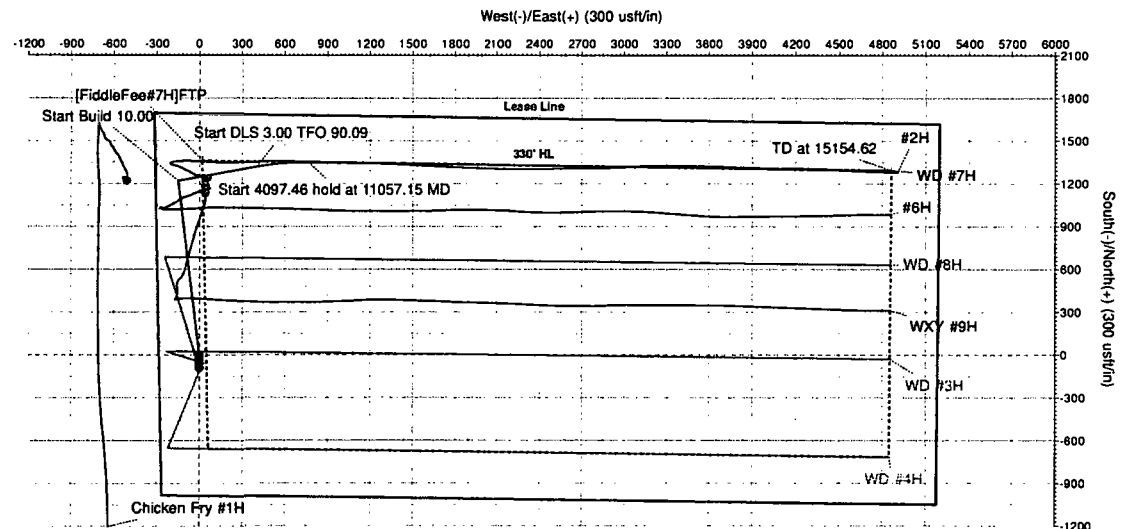


Azimuths to Grid North  
True North: -0.14°  
Magnetic North: 7.04°  
  
Magnetic Field  
Strength: 47991.8nT  
Dip Angle: 59.98°  
Date: 8/8/2018  
Model: HDGM

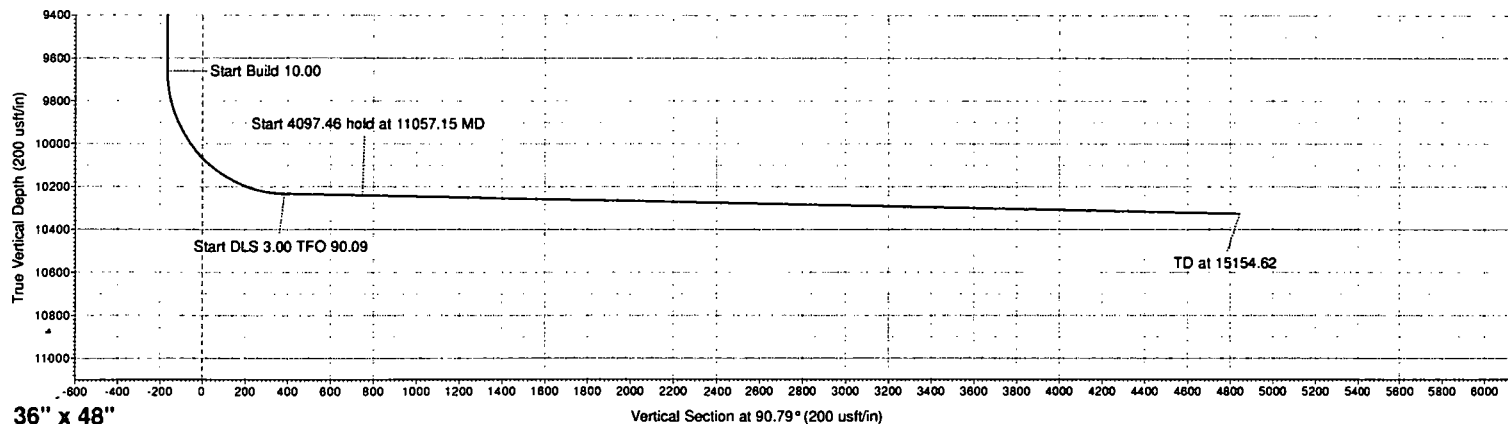
Azimuth Corrections

Total Magnetic Corr. (M to G): 7.04°

Declination (M to T): 7.18° East



Target Line: 10224' TVD @ 0° VS: 88.8° INC



Marathon Oil  
Corporation



36" x 48"