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**NM OIL CONSERVATION  
ARTESIA DISTRICT**

**DEC 03 2018**

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## **MARATHON OIL CORP.**

**Eddy County, NM (NAD27)  
Southern Comfort State 24-28-25  
WA #5H**

*30-015-44831*

**OH**

**Design: OH (Actual)**

## **Standard Survey Report**

**17 September, 2018**



**Company:** MARATHON OIL CORP.  
**Project:** Eddy County, NM (NAD27)  
**Site:** Southern Comfort State 24-28-25  
**Well:** WA #5H  
**Wellbore:** OH  
**Design:** OH (Actual)

**Local Co-ordinate Reference:** Well WA #5H  
**TVD Reference:** GE 2917' + KB 26.5' @ 2943.50usft (H&P 498)  
**MD Reference:** GE 2917' + KB 26.5' @ 2943.50usft (H&P 498)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 5000.1 Single User Db

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

**Site** Southern Comfort State 24-28-25

**Site Position:** **From:** Map **Northing:** 432,128.89 usft **Latitude:** 32° 11' 15.69507 N  
**Position Uncertainty:** 0.00 usft **Easting:** 591,559.01 usft **Longitude:** 104° 2' 14.5418 W  
**Slot Radius:** 13-3/16 " **Grid Convergence:** 0.16 °

**Well** WA #5H  
**Well Position** **+N/-S** 0.00 usft **Northing:** 432,128.89 usft **Latitude:** 32° 11' 15.69507 N  
**+E/-W** 0.00 usft **Easting:** 591,559.01 usft **Longitude:** 104° 2' 14.5418 W  
**Position Uncertainty** 0.00 usft **Wellhead Elevation:** 0.00 usft **Ground Level:** 2,917.00 usft

**Wellbore** OH

| Magnetics | Model Name   | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|-----------|--------------|-------------|-----------------|---------------|---------------------|
|           | User Defined | 6/12/2018   | 7.02            | 59.99         | 47,939              |

**Design** OH (Actual)

**Audit Notes:**

**Version:** Actual **Phase:** ACTUAL **Tie On Depth:** 0.00

**Vertical Section:** **Depth From (TVD) (usft)** **+N/-S (usft)** **+E/-W (usft)** **Direction (°)**  
0.00 0.00 0.00 180.00

**Survey Program** Date 9/17/2018

| From (usft) | To (usft) | Survey (Wellbore)                          | Tool Name  | Description               |
|-------------|-----------|--------------------------------------------|------------|---------------------------|
| 237.00      | 10,260.00 | SDI Survey 237' MD- 10236' MD (OH)         | MWD+IFR+MS | MWD + IFR + Multi Station |
| 10,328.00   | 17,198.00 | LEAM MWD Surveys (10,236'MD) 10,328'       | MWD+IFR1   | MWD + IFR1                |
| 17,247.00   | 17,247.00 | Projected to T.D.- 17,247' MD- 9,905.58' T | Project    | Projection                |

**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) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 0.00                  | 0.00            | 0.00        | 0.00                  | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 237.00                | 1.28            | 46.30       | 236.98                | 1.83         | 1.91         | -1.83                   | 0.54                    | 0.54                   | 0.00                  |
| 329.00                | 1.18            | 61.16       | 328.96                | 3.00         | 3.49         | -3.00                   | 0.36                    | -0.11                  | 16.15                 |
| 380.00                | 1.28            | 61.02       | 379.95                | 3.53         | 4.44         | -3.53                   | 0.20                    | 0.20                   | -0.27                 |
| 525.00                | 2.01            | 71.92       | 524.89                | 5.10         | 8.28         | -5.10                   | 0.55                    | 0.50                   | 7.52                  |
| 617.00                | 0.89            | 359.54      | 616.86                | 6.31         | 9.81         | -6.31                   | 2.10                    | -1.22                  | -78.67                |
| 709.00                | 0.86            | 330.19      | 708.85                | 7.63         | 9.46         | -7.63                   | 0.48                    | -0.03                  | -31.90                |
| 801.00                | 0.81            | 316.68      | 800.84                | 8.70         | 8.67         | -8.70                   | 0.22                    | -0.05                  | -14.68                |
| 893.00                | 1.12            | 286.19      | 892.83                | 9.42         | 7.36         | -9.42                   | 0.64                    | 0.34                   | -33.14                |

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**Survey**

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|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 985.00                | 1.44            | 287.61      | 984.81                | 10.02        | 5.39         | -10.02                  | 0.35                    | 0.35                   | 1.54                  |
| 1,079.00              | 1.38            | 288.34      | 1,078.78              | 10.74        | 3.19         | -10.74                  | 0.07                    | -0.06                  | 0.78                  |
| 1,174.00              | 1.42            | 260.77      | 1,173.75              | 10.91        | 0.95         | -10.91                  | 0.70                    | 0.04                   | -29.02                |
| 1,268.00              | 1.74            | 248.94      | 1,267.72              | 10.21        | -1.54        | -10.21                  | 0.48                    | 0.34                   | -12.59                |
| 1,362.00              | 1.52            | 200.13      | 1,361.68              | 8.53         | -3.30        | -8.53                   | 1.45                    | -0.23                  | -51.93                |
| 1,457.00              | 1.85            | 172.58      | 1,456.64              | 5.82         | -3.53        | -5.82                   | 0.91                    | 0.35                   | -29.00                |
| 1,552.00              | 0.68            | 146.28      | 1,551.62              | 3.83         | -3.02        | -3.83                   | 1.34                    | -1.23                  | -27.68                |
| 1,646.00              | 0.88            | 51.67       | 1,645.61              | 3.82         | -2.15        | -3.82                   | 1.23                    | 0.21                   | -100.65               |
| 1,741.00              | 0.84            | 40.70       | 1,740.60              | 4.80         | -1.12        | -4.80                   | 0.18                    | -0.04                  | -11.55                |
| 1,836.00              | 1.22            | 51.48       | 1,835.59              | 5.95         | 0.13         | -5.95                   | 0.45                    | 0.40                   | 11.35                 |
| 1,930.00              | 1.84            | 72.62       | 1,929.55              | 7.03         | 2.35         | -7.03                   | 0.88                    | 0.66                   | 22.49                 |
| 2,025.00              | 1.97            | 107.52      | 2,024.50              | 6.99         | 5.36         | -6.99                   | 1.21                    | 0.14                   | 36.74                 |
| 2,119.00              | 0.55            | 112.63      | 2,118.48              | 6.33         | 7.32         | -6.33                   | 1.51                    | -1.51                  | 5.44                  |
| 2,213.00              | 0.67            | 60.27       | 2,212.47              | 6.43         | 8.21         | -6.43                   | 0.58                    | 0.13                   | -55.70                |
| 2,307.00              | 1.69            | 103.03      | 2,306.45              | 6.39         | 10.04        | -6.39                   | 1.36                    | 1.09                   | 45.49                 |
| 2,402.00              | 1.19            | 123.07      | 2,401.42              | 5.54         | 12.23        | -5.54                   | 0.74                    | -0.53                  | 21.09                 |
| 2,497.00              | 1.38            | 119.78      | 2,496.40              | 4.43         | 14.05        | -4.43                   | 0.21                    | 0.20                   | -3.46                 |
| 2,591.00              | 0.34            | 211.81      | 2,590.39              | 3.63         | 14.89        | -3.63                   | 1.52                    | -1.11                  | 97.90                 |
| 2,682.00              | 0.58            | 269.58      | 2,681.39              | 3.40         | 14.28        | -3.40                   | 0.54                    | 0.26                   | 63.48                 |
| 2,776.00              | 2.16            | 258.09      | 2,775.36              | 3.03         | 12.08        | -3.03                   | 1.70                    | 1.68                   | -12.22                |
| 2,870.00              | 2.57            | 259.11      | 2,869.28              | 2.27         | 8.27         | -2.27                   | 0.44                    | 0.44                   | 1.09                  |
| 2,965.00              | 2.49            | 257.06      | 2,964.19              | 1.40         | 4.17         | -1.40                   | 0.13                    | -0.08                  | -2.16                 |
| 3,060.00              | 2.43            | 259.94      | 3,059.10              | 0.59         | 0.18         | -0.59                   | 0.14                    | -0.06                  | 3.03                  |
| 3,154.00              | 2.55            | 263.01      | 3,153.01              | -0.02        | -3.86        | 0.02                    | 0.19                    | 0.13                   | 3.27                  |
| 3,249.00              | 2.72            | 265.39      | 3,247.91              | -0.45        | -8.21        | 0.45                    | 0.21                    | 0.18                   | 2.51                  |
| 3,344.00              | 1.58            | 286.63      | 3,342.84              | -0.26        | -11.71       | 0.26                    | 1.44                    | -1.20                  | 22.36                 |
| 3,438.00              | 1.31            | 319.56      | 3,436.81              | 0.93         | -13.65       | -0.93                   | 0.91                    | -0.29                  | 35.03                 |
| 3,533.00              | 1.52            | 15.11       | 3,531.79              | 2.97         | -14.02       | -2.97                   | 1.40                    | 0.22                   | 58.47                 |
| 3,628.00              | 1.67            | 5.29        | 3,626.75              | 5.57         | -13.57       | -5.57                   | 0.33                    | 0.16                   | -10.34                |
| 3,722.00              | 1.63            | 6.32        | 3,720.71              | 8.26         | -13.29       | -8.26                   | 0.05                    | -0.04                  | 1.10                  |
| 3,817.00              | 2.40            | 46.46       | 3,815.66              | 10.97        | -11.70       | -10.97                  | 1.64                    | 0.81                   | 42.25                 |
| 3,911.00              | 4.48            | 63.56       | 3,909.49              | 13.96        | -6.99        | -13.96                  | 2.44                    | 2.21                   | 18.19                 |
| 4,006.00              | 5.44            | 78.11       | 4,004.13              | 16.54        | 0.74         | -16.54                  | 1.66                    | 1.01                   | 15.32                 |
| 4,100.00              | 5.25            | 78.06       | 4,097.72              | 18.35        | 9.31         | -18.35                  | 0.20                    | -0.20                  | -0.05                 |
| 4,195.00              | 4.93            | 76.31       | 4,192.35              | 20.22        | 17.53        | -20.22                  | 0.37                    | -0.34                  | -1.84                 |
| 4,289.00              | 4.67            | 75.21       | 4,286.02              | 22.15        | 25.15        | -22.15                  | 0.29                    | -0.28                  | -1.17                 |
| 4,384.00              | 5.16            | 84.40       | 4,380.67              | 23.55        | 33.14        | -23.55                  | 0.97                    | 0.52                   | 9.67                  |
| 4,478.00              | 5.35            | 88.25       | 4,474.28              | 24.10        | 41.73        | -24.10                  | 0.43                    | 0.20                   | 4.10                  |
| 4,572.00              | 6.80            | 81.03       | 4,567.75              | 25.10        | 51.61        | -25.10                  | 1.74                    | 1.54                   | -7.68                 |
| 4,667.00              | 7.64            | 73.57       | 4,662.00              | 27.76        | 63.22        | -27.76                  | 1.32                    | 0.88                   | -7.85                 |
| 4,761.00              | 7.78            | 71.02       | 4,755.15              | 31.60        | 75.23        | -31.60                  | 0.39                    | 0.15                   | -2.71                 |
| 4,856.00              | 7.87            | 70.14       | 4,849.26              | 35.90        | 87.43        | -35.90                  | 0.16                    | 0.09                   | -0.93                 |
| 4,950.00              | 8.07            | 75.39       | 4,942.35              | 39.75        | 99.87        | -39.75                  | 0.80                    | 0.21                   | 5.59                  |

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**Survey**

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|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 5,045.00              | 7.82            | 77.82       | 5,036.44              | 42.80        | 112.64       | -42.80                  | 0.44                    | -0.26                  | 2.56                  |
| 5,139.00              | 7.08            | 77.78       | 5,129.65              | 45.37        | 124.55       | -45.37                  | 0.79                    | -0.79                  | -0.04                 |
| 5,234.00              | 7.32            | 69.96       | 5,223.90              | 48.69        | 135.96       | -48.69                  | 1.06                    | 0.25                   | -8.23                 |
| 5,328.00              | 7.79            | 69.57       | 5,317.09              | 52.96        | 147.55       | -52.96                  | 0.50                    | 0.50                   | -0.41                 |
| 5,423.00              | 7.25            | 69.29       | 5,411.27              | 57.33        | 159.19       | -57.33                  | 0.57                    | -0.57                  | -0.29                 |
| 5,517.00              | 8.44            | 68.49       | 5,504.39              | 61.96        | 171.16       | -61.96                  | 1.27                    | 1.27                   | -0.85                 |
| 5,612.00              | 8.50            | 68.87       | 5,598.35              | 67.04        | 184.19       | -67.04                  | 0.09                    | 0.06                   | 0.40                  |
| 5,706.00              | 8.79            | 68.72       | 5,691.28              | 72.16        | 197.37       | -72.16                  | 0.31                    | 0.31                   | -0.16                 |
| 5,800.00              | 8.64            | 70.40       | 5,784.20              | 77.13        | 210.71       | -77.13                  | 0.31                    | -0.16                  | 1.79                  |
| 5,895.00              | 8.75            | 75.24       | 5,878.11              | 81.37        | 224.42       | -81.37                  | 0.78                    | 0.12                   | 5.09                  |
| 5,990.00              | 8.30            | 76.12       | 5,972.06              | 84.85        | 238.06       | -84.85                  | 0.49                    | -0.47                  | 0.93                  |
| 6,084.00              | 7.82            | 74.61       | 6,065.13              | 88.18        | 250.82       | -88.18                  | 0.56                    | -0.51                  | -1.61                 |
| 6,179.00              | 7.18            | 73.95       | 6,159.31              | 91.53        | 262.75       | -91.53                  | 0.68                    | -0.67                  | -0.69                 |
| 6,273.00              | 7.04            | 74.00       | 6,252.59              | 94.74        | 273.94       | -94.74                  | 0.15                    | -0.15                  | 0.05                  |
| 6,368.00              | 6.33            | 72.51       | 6,346.95              | 97.92        | 284.53       | -97.92                  | 0.77                    | -0.75                  | -1.57                 |
| 6,462.00              | 6.98            | 72.42       | 6,440.31              | 101.21       | 294.91       | -101.21                 | 0.69                    | 0.69                   | -0.10                 |
| 6,557.00              | 7.11            | 69.64       | 6,534.59              | 104.99       | 305.93       | -104.99                 | 0.38                    | 0.14                   | -2.93                 |
| 6,651.00              | 7.85            | 70.84       | 6,627.79              | 109.13       | 317.45       | -109.13                 | 0.80                    | 0.79                   | 1.28                  |
| 6,746.00              | 8.00            | 70.55       | 6,721.89              | 113.46       | 329.81       | -113.46                 | 0.16                    | 0.16                   | -0.31                 |
| 6,840.00              | 6.87            | 69.13       | 6,815.10              | 117.64       | 341.23       | -117.64                 | 1.22                    | -1.20                  | -1.51                 |
| 6,935.00              | 5.89            | 64.23       | 6,909.51              | 121.78       | 350.93       | -121.78                 | 1.18                    | -1.03                  | -5.16                 |
| 7,030.00              | 7.82            | 75.44       | 7,003.83              | 125.52       | 361.58       | -125.52                 | 2.46                    | 2.03                   | 11.80                 |
| 7,124.00              | 7.74            | 74.40       | 7,096.96              | 128.83       | 373.86       | -128.83                 | 0.17                    | -0.09                  | -1.11                 |
| 7,218.00              | 6.55            | 70.99       | 7,190.23              | 132.28       | 385.03       | -132.28                 | 1.34                    | -1.27                  | -3.63                 |
| 7,313.00              | 5.83            | 74.00       | 7,284.68              | 135.38       | 394.79       | -135.38                 | 0.83                    | -0.76                  | 3.17                  |
| 7,407.00              | 5.82            | 78.32       | 7,378.19              | 137.66       | 404.05       | -137.66                 | 0.47                    | -0.01                  | 4.60                  |
| 7,502.00              | 5.23            | 73.50       | 7,472.75              | 139.86       | 412.91       | -139.86                 | 0.79                    | -0.62                  | -5.07                 |
| 7,596.00              | 3.24            | 74.62       | 7,566.49              | 141.79       | 419.58       | -141.79                 | 2.12                    | -2.12                  | 1.19                  |
| 7,691.00              | 0.74            | 97.98       | 7,661.42              | 142.41       | 422.78       | -142.41                 | 2.71                    | -2.63                  | 24.59                 |
| 7,785.00              | 0.65            | 289.14      | 7,755.42              | 142.50       | 422.88       | -142.50                 | 1.47                    | -0.10                  | -179.62               |
| 7,880.00              | 1.34            | 257.79      | 7,850.41              | 142.44       | 421.28       | -142.44                 | 0.90                    | 0.73                   | -33.00                |
| 7,974.00              | 1.61            | 247.93      | 7,944.38              | 141.72       | 418.99       | -141.72                 | 0.39                    | 0.29                   | -10.49                |
| 8,069.00              | 0.54            | 287.63      | 8,039.36              | 141.35       | 417.32       | -141.35                 | 1.31                    | -1.13                  | 41.79                 |
| 8,163.00              | 0.57            | 292.29      | 8,133.36              | 141.66       | 416.47       | -141.66                 | 0.06                    | 0.03                   | 4.96                  |
| 8,258.00              | 0.84            | 279.76      | 8,228.35              | 141.96       | 415.34       | -141.96                 | 0.33                    | 0.28                   | -13.19                |
| 8,353.00              | 0.95            | 267.25      | 8,323.34              | 142.04       | 413.87       | -142.04                 | 0.24                    | 0.12                   | -13.17                |
| 8,447.00              | 1.00            | 275.32      | 8,417.32              | 142.08       | 412.28       | -142.08                 | 0.16                    | 0.05                   | 8.59                  |
| 8,542.00              | 1.38            | 258.63      | 8,512.30              | 141.93       | 410.33       | -141.93                 | 0.54                    | 0.40                   | -17.57                |
| 8,637.00              | 0.17            | 206.23      | 8,607.29              | 141.58       | 409.14       | -141.58                 | 1.35                    | -1.27                  | -55.16                |
| 8,732.00              | 0.71            | 52.70       | 8,702.29              | 141.81       | 409.55       | -141.81                 | 0.91                    | 0.57                   | -161.61               |
| 8,827.00              | 0.38            | 103.88      | 8,797.29              | 142.09       | 410.32       | -142.09                 | 0.59                    | -0.35                  | 53.87                 |
| 8,921.00              | 1.38            | 93.54       | 8,891.27              | 141.94       | 411.76       | -141.94                 | 1.07                    | 1.06                   | -11.00                |
| 9,015.00              | 1.64            | 102.39      | 8,985.24              | 141.59       | 414.20       | -141.59                 | 0.37                    | 0.28                   | 9.41                  |

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|-----------------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 9,110.00                                | 1.26            | 104.92      | 9,080.21              | 141.02       | 416.54       | -141.02                 | 0.41                    | -0.40                  | 2.66                  |
| 9,176.00                                | 1.12            | 109.19      | 9,146.20              | 140.63       | 417.85       | -140.63                 | 0.25                    | -0.21                  | 6.47                  |
| <b>MWD Survey ( 9176.00' MD )</b>       |                 |             |                       |              |              |                         |                         |                        |                       |
| 9,243.00                                | 1.08            | 117.23      | 9,213.18              | 140.12       | 419.03       | -140.12                 | 0.24                    | -0.06                  | 12.00                 |
| <b>Proj. to Bit ( 9243.00' MD )</b>     |                 |             |                       |              |              |                         |                         |                        |                       |
| 9,290.00                                | 1.07            | 123.12      | 9,260.18              | 139.68       | 419.79       | -139.68                 | 0.24                    | -0.03                  | 12.54                 |
| 9,385.00                                | 5.96            | 160.45      | 9,354.98              | 134.54       | 422.19       | -134.54                 | 5.42                    | 5.15                   | 39.29                 |
| 9,479.00                                | 18.98           | 161.58      | 9,446.56              | 115.36       | 428.68       | -115.36                 | 13.85                   | 13.85                  | 1.20                  |
| 9,573.00                                | 33.53           | 175.76      | 9,530.72              | 74.71        | 435.47       | -74.71                  | 16.76                   | 15.48                  | 15.09                 |
| 9,668.00                                | 45.07           | 180.12      | 9,604.12              | 14.70        | 437.35       | -14.70                  | 12.48                   | 12.15                  | 4.59                  |
| 9,762.00                                | 49.98           | 178.70      | 9,667.58              | -54.60       | 438.09       | 54.60                   | 5.34                    | 5.22                   | -1.51                 |
| 9,857.00                                | 53.93           | 179.54      | 9,726.11              | -129.39      | 439.23       | 129.39                  | 4.22                    | 4.16                   | 0.88                  |
| 9,952.00                                | 59.45           | 179.98      | 9,778.26              | -208.76      | 439.55       | 208.76                  | 5.82                    | 5.81                   | 0.46                  |
| 10,046.00                               | 62.93           | 181.75      | 9,823.56              | -291.09      | 438.29       | 291.09                  | 4.05                    | 3.70                   | 1.88                  |
| 10,141.00                               | 71.77           | 184.97      | 9,860.12              | -378.51      | 433.07       | 378.51                  | 9.82                    | 9.31                   | 3.39                  |
| 10,236.00                               | 78.52           | 184.28      | 9,884.46              | -469.98      | 425.68       | 469.98                  | 7.14                    | 7.11                   | -0.73                 |
| 10,318.00                               | 90.06           | 182.96      | 9,892.60              | -551.27      | 420.55       | 551.27                  | 14.17                   | 14.08                  | -1.61                 |
| <b>7" Csg.- 10318' MD- 9892.60' TVD</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 10,328.00                               | 91.47           | 182.80      | 9,892.47              | -561.26      | 420.05       | 561.26                  | 14.17                   | 14.08                  | -1.59                 |
| 10,422.00                               | 91.47           | 182.98      | 9,890.06              | -655.11      | 415.31       | 655.11                  | 0.19                    | 0.00                   | 0.19                  |
| 10,517.00                               | 91.38           | 182.71      | 9,887.69              | -749.96      | 410.60       | 749.96                  | 0.30                    | -0.09                  | -0.28                 |
| 10,611.00                               | 90.81           | 182.54      | 9,885.90              | -843.85      | 406.29       | 843.85                  | 0.63                    | -0.61                  | -0.18                 |
| 10,705.00                               | 90.11           | 180.69      | 9,885.14              | -937.80      | 403.64       | 937.80                  | 2.10                    | -0.74                  | -1.97                 |
| 10,799.00                               | 89.80           | 180.78      | 9,885.22              | -1,031.79    | 402.44       | 1,031.79                | 0.34                    | -0.33                  | 0.10                  |
| 10,894.00                               | 89.85           | 180.60      | 9,885.51              | -1,126.79    | 401.29       | 1,126.79                | 0.20                    | 0.05                   | -0.19                 |
| 10,988.00                               | 89.19           | 180.78      | 9,886.29              | -1,220.78    | 400.16       | 1,220.78                | 0.73                    | -0.70                  | 0.19                  |
| 11,082.00                               | 88.70           | 180.25      | 9,888.02              | -1,314.76    | 399.32       | 1,314.76                | 0.77                    | -0.52                  | -0.56                 |
| 11,176.00                               | 90.59           | 179.90      | 9,888.61              | -1,408.75    | 399.19       | 1,408.75                | 2.04                    | 2.01                   | -0.37                 |
| 11,270.00                               | 90.46           | 179.99      | 9,887.75              | -1,502.75    | 399.28       | 1,502.75                | 0.17                    | -0.14                  | 0.10                  |
| 11,365.00                               | 90.11           | 179.90      | 9,887.27              | -1,597.74    | 399.38       | 1,597.74                | 0.38                    | -0.37                  | -0.09                 |
| 11,458.00                               | 90.15           | 180.08      | 9,887.06              | -1,690.74    | 399.39       | 1,690.74                | 0.20                    | 0.04                   | 0.19                  |
| 11,552.00                               | 89.14           | 178.67      | 9,887.64              | -1,784.73    | 400.42       | 1,784.73                | 1.85                    | -1.07                  | -1.50                 |
| 11,646.00                               | 88.66           | 178.67      | 9,889.45              | -1,878.69    | 402.60       | 1,878.69                | 0.51                    | -0.51                  | 0.00                  |
| 11,740.00                               | 88.66           | 178.49      | 9,891.65              | -1,972.64    | 404.93       | 1,972.64                | 0.19                    | 0.00                   | -0.19                 |
| 11,835.00                               | 89.01           | 178.23      | 9,893.58              | -2,067.58    | 407.65       | 2,067.58                | 0.46                    | 0.37                   | -0.27                 |
| 11,928.00                               | 89.67           | 180.08      | 9,894.65              | -2,160.56    | 409.02       | 2,160.56                | 2.11                    | 0.71                   | 1.99                  |
| 12,023.00                               | 89.85           | 178.67      | 9,895.05              | -2,255.55    | 410.05       | 2,255.55                | 1.50                    | 0.19                   | -1.48                 |
| 12,117.00                               | 90.64           | 178.76      | 9,894.65              | -2,349.52    | 412.16       | 2,349.52                | 0.85                    | 0.84                   | 0.10                  |
| 12,212.00                               | 93.01           | 180.78      | 9,891.62              | -2,444.46    | 412.54       | 2,444.46                | 3.28                    | 2.49                   | 2.13                  |
| 12,305.00                               | 92.26           | 181.22      | 9,887.34              | -2,537.35    | 410.92       | 2,537.35                | 0.93                    | -0.81                  | 0.47                  |
| 12,400.00                               | 92.84           | 180.60      | 9,883.12              | -2,632.24    | 409.41       | 2,632.24                | 0.89                    | 0.61                   | -0.65                 |
| 12,495.00                               | 92.57           | 177.35      | 9,878.63              | -2,727.11    | 411.11       | 2,727.11                | 3.43                    | -0.28                  | -3.42                 |
| 12,589.00                               | 91.47           | 178.58      | 9,875.32              | -2,820.99    | 414.45       | 2,820.99                | 1.75                    | -1.17                  | 1.31                  |
| 12,684.00                               | 91.30           | 180.16      | 9,873.02              | -2,915.95    | 415.49       | 2,915.95                | 1.67                    | -0.18                  | 1.66                  |

**Company:** MARATHON OIL CORP.  
**Project:** Eddy County, NM (NAD27)  
**Site:** Southern Comfort State 24-28-25  
**Well:** WA #5H  
**Wellbore:** OH  
**Design:** OH (Actual)

**Local Co-ordinate Reference:** Well WA #5H  
**TVD Reference:** GE 2917' + KB 26.5' @ 2943.50usft (H&P 498)  
**MD Reference:** GE 2917' + KB 26.5' @ 2943.50usft (H&P 498)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 5000.1 Single User Db

### Survey

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 12,779.00             | 87.87           | 180.60      | 9,873.71              | -3,010.93    | 414.86       | 3,010.93                | 3.64                    | -3.61                  | 0.46                  |
| 12,872.00             | 86.37           | 180.69      | 9,878.38              | -3,103.80    | 413.82       | 3,103.80                | 1.62                    | -1.61                  | 0.10                  |
| 12,967.00             | 87.69           | 179.99      | 9,883.31              | -3,198.67    | 413.25       | 3,198.67                | 1.57                    | 1.39                   | -0.74                 |
| 13,062.00             | 88.22           | 179.20      | 9,886.70              | -3,293.61    | 413.92       | 3,293.61                | 1.00                    | 0.56                   | -0.83                 |
| 13,157.00             | 89.89           | 179.46      | 9,888.26              | -3,388.59    | 415.03       | 3,388.59                | 1.78                    | 1.76                   | 0.27                  |
| 13,251.00             | 88.19           | 179.29      | 9,889.84              | -3,482.56    | 416.06       | 3,482.56                | 1.82                    | -1.81                  | -0.18                 |
| 13,346.00             | 90.11           | 179.55      | 9,891.25              | -3,577.54    | 417.02       | 3,577.54                | 2.04                    | 2.02                   | 0.27                  |
| 13,441.00             | 91.08           | 179.64      | 9,890.26              | -3,672.53    | 417.69       | 3,672.53                | 1.03                    | 1.02                   | 0.09                  |
| 13,535.00             | 90.20           | 179.99      | 9,889.21              | -3,766.53    | 418.00       | 3,766.53                | 1.01                    | -0.94                  | 0.37                  |
| 13,629.00             | 89.89           | 180.34      | 9,889.14              | -3,860.53    | 417.73       | 3,860.53                | 0.50                    | -0.33                  | 0.37                  |
| 13,723.00             | 88.40           | 179.73      | 9,890.54              | -3,954.51    | 417.67       | 3,954.51                | 1.71                    | -1.59                  | -0.65                 |
| 13,817.00             | 89.19           | 178.76      | 9,892.52              | -4,048.48    | 418.91       | 4,048.48                | 1.33                    | 0.84                   | -1.03                 |
| 13,911.00             | 88.75           | 179.64      | 9,894.21              | -4,142.46    | 420.22       | 4,142.46                | 1.05                    | -0.47                  | 0.94                  |
| 14,006.00             | 87.34           | 179.73      | 9,897.45              | -4,237.40    | 420.74       | 4,237.40                | 1.49                    | -1.48                  | 0.09                  |
| 14,100.00             | 87.65           | 178.32      | 9,901.56              | -4,331.29    | 422.34       | 4,331.29                | 1.53                    | 0.33                   | -1.50                 |
| 14,195.00             | 89.76           | 179.37      | 9,903.70              | -4,426.24    | 424.25       | 4,426.24                | 2.48                    | 2.22                   | 1.11                  |
| 14,289.00             | 88.35           | 178.85      | 9,905.25              | -4,520.21    | 425.71       | 4,520.21                | 1.60                    | -1.50                  | -0.55                 |
| 14,384.00             | 88.75           | 178.06      | 9,907.66              | -4,615.15    | 428.27       | 4,615.15                | 0.93                    | 0.42                   | -0.83                 |
| 14,479.00             | 90.99           | 177.88      | 9,907.87              | -4,710.08    | 431.64       | 4,710.08                | 2.37                    | 2.36                   | -0.19                 |
| 14,574.00             | 93.14           | 177.44      | 9,904.45              | -4,804.94    | 435.51       | 4,804.94                | 2.31                    | 2.26                   | -0.46                 |
| 14,668.00             | 91.60           | 177.88      | 9,900.56              | -4,898.77    | 439.35       | 4,898.77                | 1.70                    | -1.64                  | 0.47                  |
| 14,763.00             | 90.42           | 178.23      | 9,898.89              | -4,993.70    | 442.57       | 4,993.70                | 1.30                    | -1.24                  | 0.37                  |
| 14,857.00             | 89.67           | 178.41      | 9,898.81              | -5,087.66    | 445.33       | 5,087.66                | 0.82                    | -0.80                  | 0.19                  |
| 14,951.00             | 89.36           | 176.03      | 9,899.61              | -5,181.54    | 449.89       | 5,181.54                | 2.55                    | -0.33                  | -2.53                 |
| 15,046.00             | 91.08           | 183.33      | 9,899.24              | -5,276.47    | 450.42       | 5,276.47                | 7.89                    | 1.81                   | 7.68                  |
| 15,141.00             | 90.02           | 183.68      | 9,898.33              | -5,371.29    | 444.61       | 5,371.29                | 1.18                    | -1.12                  | 0.37                  |
| 15,235.00             | 91.03           | 181.22      | 9,897.47              | -5,465.19    | 440.59       | 5,465.19                | 2.83                    | 1.07                   | -2.62                 |
| 15,329.00             | 90.68           | 181.92      | 9,896.07              | -5,559.14    | 438.02       | 5,559.14                | 0.83                    | -0.37                  | 0.74                  |
| 15,424.00             | 89.80           | 181.92      | 9,895.67              | -5,654.09    | 434.83       | 5,654.09                | 0.93                    | -0.93                  | 0.00                  |
| 15,518.00             | 90.90           | 180.25      | 9,895.10              | -5,748.06    | 433.05       | 5,748.06                | 2.13                    | 1.17                   | -1.78                 |
| 15,612.00             | 89.71           | 179.99      | 9,894.60              | -5,842.06    | 432.86       | 5,842.06                | 1.30                    | -1.27                  | -0.28                 |
| 15,707.00             | 89.49           | 180.25      | 9,895.26              | -5,937.06    | 432.66       | 5,937.06                | 0.36                    | -0.23                  | 0.27                  |
| 15,801.00             | 88.48           | 180.08      | 9,896.92              | -6,031.04    | 432.39       | 6,031.04                | 1.09                    | -1.07                  | -0.18                 |
| 15,896.00             | 89.27           | 181.13      | 9,898.79              | -6,126.02    | 431.38       | 6,126.02                | 1.38                    | 0.83                   | 1.11                  |
| 15,990.00             | 91.96           | 182.27      | 9,897.78              | -6,219.96    | 428.60       | 6,219.96                | 3.11                    | 2.86                   | 1.21                  |
| 16,085.00             | 91.87           | 182.98      | 9,894.61              | -6,314.81    | 424.25       | 6,314.81                | 0.75                    | -0.09                  | 0.75                  |
| 16,180.00             | 91.12           | 183.42      | 9,892.13              | -6,409.62    | 418.95       | 6,409.62                | 0.92                    | -0.79                  | 0.46                  |
| 16,275.00             | 90.33           | 184.12      | 9,890.93              | -6,504.41    | 412.70       | 6,504.41                | 1.11                    | -0.83                  | 0.74                  |
| 16,368.00             | 91.78           | 181.48      | 9,889.21              | -6,597.27    | 408.16       | 6,597.27                | 3.24                    | 1.56                   | -2.84                 |
| 16,462.00             | 89.76           | 179.55      | 9,887.95              | -6,691.25    | 407.31       | 6,691.25                | 2.97                    | -2.15                  | -2.05                 |
| 16,557.00             | 88.79           | 178.41      | 9,889.15              | -6,786.23    | 409.01       | 6,786.23                | 1.58                    | -1.02                  | -1.20                 |
| 16,651.00             | 89.54           | 179.37      | 9,890.52              | -6,880.20    | 410.83       | 6,880.20                | 1.30                    | 0.80                   | 1.02                  |
| 16,745.00             | 88.70           | 179.02      | 9,891.97              | -6,974.17    | 412.15       | 6,974.17                | 0.97                    | -0.89                  | -0.37                 |
| 16,840.00             | 88.57           | 179.46      | 9,894.23              | -7,069.14    | 413.41       | 7,069.14                | 0.48                    | -0.14                  | 0.46                  |

**Company:** MARATHON OIL CORP.  
**Project:** Eddy County, NM (NAD27)  
**Site:** Southern Comfort State 24-28-25  
**Well:** WA #5H  
**Wellbore:** OH  
**Design:** OH (Actual)

**Local Co-ordinate Reference:** Well WA #5H  
**TVD Reference:** GE 2917' + KB 26.5' @ 2943.50usft (H&P 498)  
**MD Reference:** GE 2917' + KB 26.5' @ 2943.50usft (H&P 498)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 5000.1 Single User Db

### Survey

| Measured Depth (usft)                                       | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|-------------------------------------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 16,934.00                                                   | 88.09           | 179.11      | 9,896.97              | -7,163.09    | 414.58       | 7,163.09                | 0.63                    | -0.51                  | -0.37                 |
| 17,028.00                                                   | 89.71           | 180.96      | 9,898.77              | -7,257.07    | 414.52       | 7,257.07                | 2.62                    | 1.72                   | 1.97                  |
| 17,123.00                                                   | 87.74           | 181.48      | 9,900.89              | -7,352.02    | 412.50       | 7,352.02                | 2.14                    | -2.07                  | 0.55                  |
| 17,198.00                                                   | 87.87           | 181.92      | 9,903.76              | -7,426.93    | 410.28       | 7,426.93                | 0.61                    | 0.17                   | 0.59                  |
| <b>LEAM MWD Surveys (10,236' MD) 10,328' MD- 17,198' MD</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 17,247.00                                                   | 87.87           | 181.92      | 9,905.58              | -7,475.87    | 408.63       | 7,475.87                | 0.00                    | 0.00                   | 0.00                  |
| <b>Projected to T.D.- 17,247' MD- 9,905.58' TVD</b>         |                 |             |                       |              |              |                         |                         |                        |                       |

### Casing Points

| Measured Depth (usft) | Vertical Depth (usft) | Name                             | Casing Diameter (") | Hole Diameter (") |
|-----------------------|-----------------------|----------------------------------|---------------------|-------------------|
| 10,318.00             | 9,892.60              | 7" Csg.- 10318' MD- 9892.60' TVD | 7                   | 8-3/4             |

### Design Annotations

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |              | Comment                                              |
|-----------------------|-----------------------|-------------------|--------------|------------------------------------------------------|
|                       |                       | +N/-S (usft)      | +E/-W (usft) |                                                      |
| 9,176.00              | 9,146.20              | 140.63            | 417.85       | MWD Survey ( 9176.00' MD )                           |
| 9,243.00              | 9,213.18              | 140.12            | 419.03       | Proj. to Bit ( 9243.00' MD )                         |
| 17,198.00             | 9,903.76              | -7,426.93         | 410.28       | LEAM MWD Surveys (10,236' MD) 10,328' MD- 17,198' MD |
| 17,247.00             | 9,905.58              | -7,475.87         | 408.63       | Projected to T.D.- 17,247' MD- 9,905.58' TVD         |

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

# MARATHON OIL CORP.

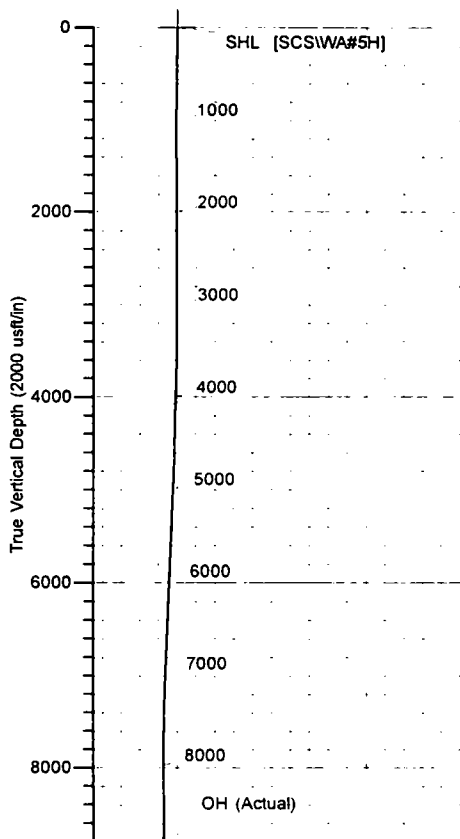
Project: Eddy County, NM (NAD27)  
 Site: Southern Comfort State 24-28-25  
 Well: WA #5H  
 Wellbore: OH  
 Design: Plan #4a



| SECTION DETAILS |          |       |        |         |          |        |       |        |         |                      |
|-----------------|----------|-------|--------|---------|----------|--------|-------|--------|---------|----------------------|
| Sec             | MD       | Inc   | Azi    | TVD     | +N/-S    | +E/-W  | Dleg  | TFace  | Vsect   | Target               |
| 1               | 10236.00 | 78.52 | 184.28 | 9884.46 | -469.98  | 425.68 | 0.00  | 0.00   | 469.98  |                      |
| 2               | 10260.00 | 82.36 | 183.44 | 9888.44 | -493.59  | 424.09 | 16.37 | -12.25 | 493.59  |                      |
| 3               | 10328.98 | 93.00 | 178.50 | 9891.23 | -562.38  | 422.94 | 17.00 | -25.03 | 562.38  |                      |
| 4               | 10495.35 | 90.00 | 179.94 | 9886.88 | -728.66  | 425.20 | 2.00  | 154.38 | 728.66  |                      |
| 5               | 17197.98 | 90.00 | 179.94 | 9887.00 | -7431.28 | 432.47 | 0.00  | 0.00   | 7431.28 | PBHL/LTP [SCSIWA#5H] |
| 6               | 17242.98 | 90.00 | 179.94 | 9887.00 | -7476.28 | 432.51 | 0.00  | 0.00   | 7476.28 |                      |



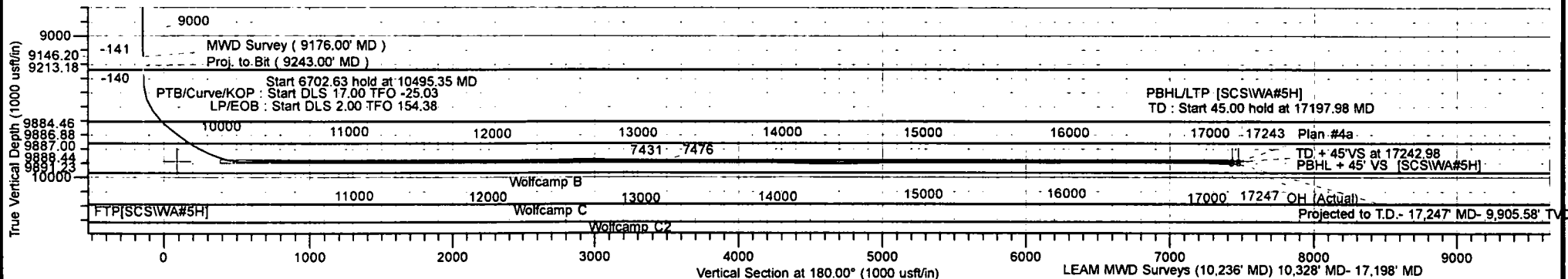
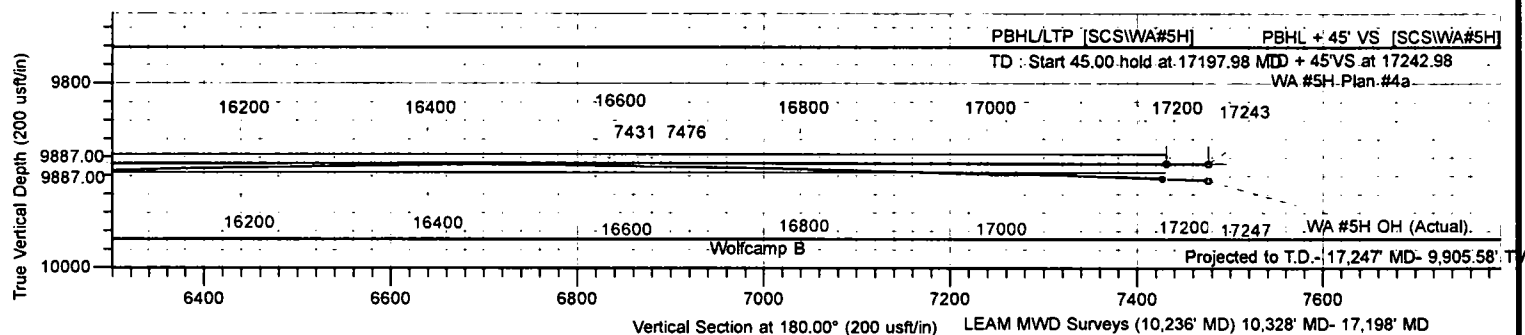
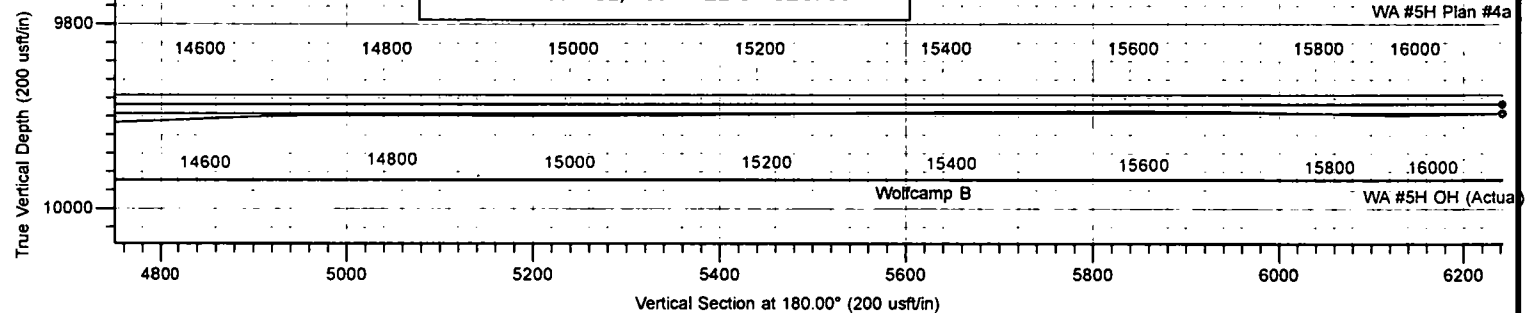
Azimuths to Grid North  
 True North: -0.16°  
 Magnetic North: 7.02°  
 Magnetic Field  
 Strength: 47939.0nT  
 Dip Angle: 59.99°  
 Date: 6/12/2018  
 Model: USER DEFINED



| DESIGN TARGET DETAILS |         |          |        |           |           |                    |                   |  |  |  |
|-----------------------|---------|----------|--------|-----------|-----------|--------------------|-------------------|--|--|--|
| Name                  | TVD     | +N/-S    | +E/-W  | Northing  | Easting   | Latitude           | Longitude         |  |  |  |
| FTP[SCSIWA#5H]        | 9887.00 | -91.38   | 424.33 | 432037.52 | 591983.31 | 32° 11' 14.77926 N | 104° 2' 9.6073 W  |  |  |  |
| PBHL + 45° VS         | 9887.00 | -7476.28 | 432.51 | 424653.22 | 591991.48 | 32° 10' 1.70159 N  | 104° 2' 9.7496 W  |  |  |  |
| PBHL/LTP [SCSIWA#5H]  | 9887.00 | -7431.28 | 432.47 | 424698.21 | 591991.44 | 32° 10' 2.14685 N  | 104° 2' 9.7487 W  |  |  |  |
| SHL [SCSIWA#5H]       | 0.00    | 0.00     | 0.00   | 432128.89 | 591559.01 | 32° 11' 15.69507 N | 104° 2' 14.5418 W |  |  |  |

PROJECT DETAILS: Eddy County, NM (NAD27)  
 Geodetic System: US State Plane 1927 (Exact solution)  
 Datum: NAD 1927 (NADCON CONUS)  
 Ellipsoid: Clarke 1866  
 Zone: New Mexico East 3001  
 Datum: GE 2917 + KB 26.5' @ 2943.50usft (H&P 498)

**ACTUAL LINE CALLS:**  
 SHL: 2424' FSL, 1808' FEL OF SEC. 25  
 BHL: 285' FSL, 1351' FEL OF SEC. 36



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

Plan: Plan #4a (WA #5H/OH)  
 Southern Comfort State 24-28-25  
 Created By: Nora Tucker  
 Date: 11/25, September 17 2018  
 Approved: \_\_\_\_\_  
 Date: \_\_\_\_\_

Project: Eddy County, NM (NAD27)  
Site: Southern Comfort State 24-28-25  
Well: WA #5H  
Wellbore: OH  
Design: Plan #4a

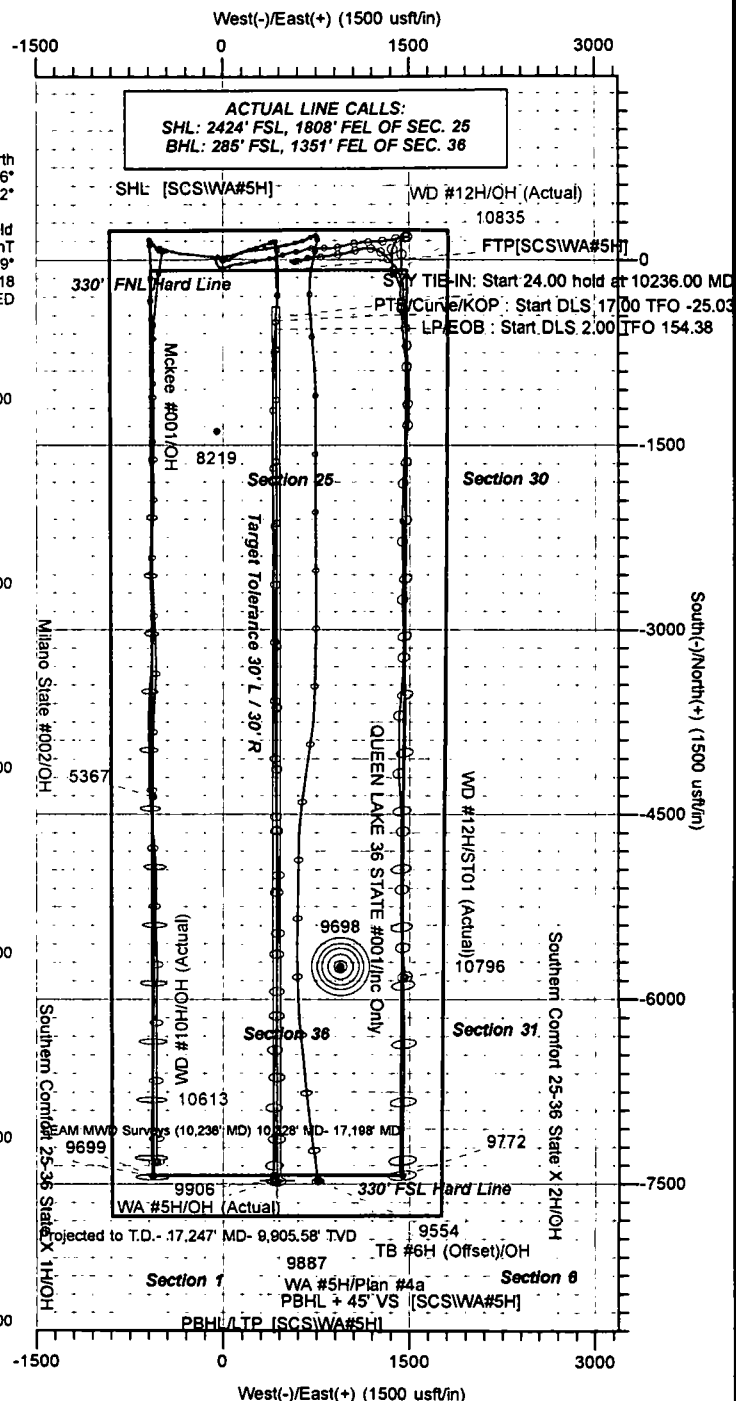
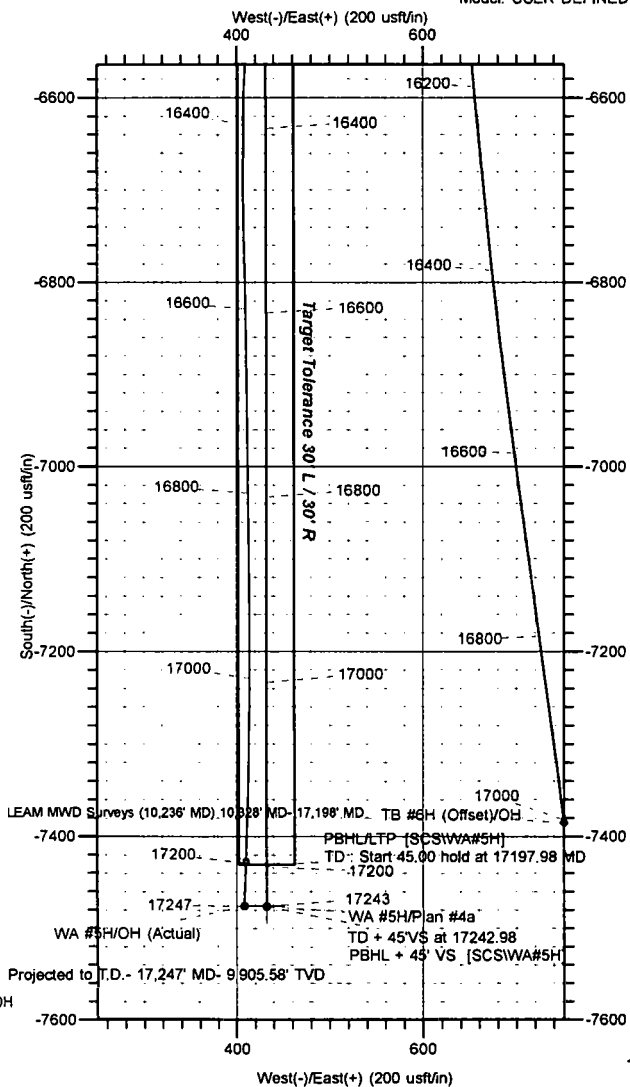
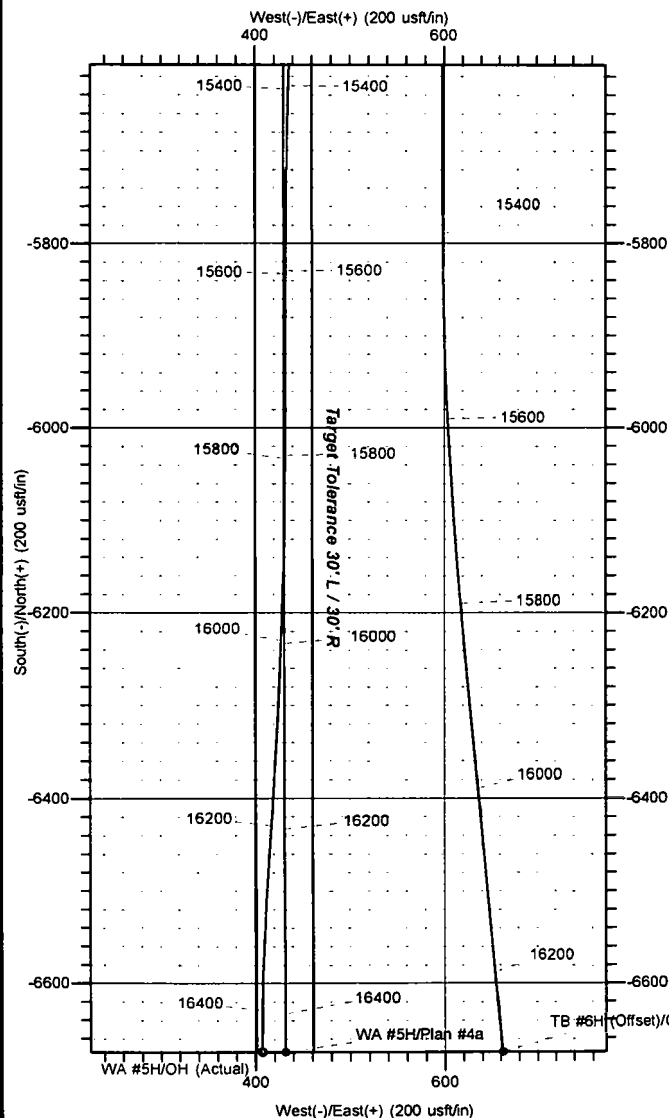


PROJECT DETAILS: Eddy County, NM (NAD27)  
Geodetic System: US State Plane 1927 (Exact solution)  
Datum: NAD 1927 (NADCON CONUS)  
Ellipsoid: Clarke 1866  
Zone: North Mexico East 3001  
Datum: GE 2917' + KB 26.5' @ 2943.50usft (H&P 498)

| Name                      | TVD     | +N/-S    | +E/-W  | Northing  | Easting          | Latitude    | Longitude         |
|---------------------------|---------|----------|--------|-----------|------------------|-------------|-------------------|
| SHL [SCSIWA#5H]           | 0.00    | 0.00     | 0.00   | 432128.89 | 591559.032° 11'  | 15.69507° N | 104° 2' 14.5418 W |
| FTP[SCSIWA#5H]            | 9887.00 | -91.38   | 424.33 | 432037.52 | 591983.332° 11'  | 14.77926° N | 104° 2' 9.6073 W  |
| PBHL + 45' VS [SCSIWA#5H] | 9887.00 | -7476.28 | 432.51 | 424653.22 | 591991.4832° 10' | 1.70159° N  | 104° 2' 9.7496 W  |
| PBHL/LTP [SCSIWA#5H]      | 9887.00 | -7431.28 | 432.47 | 424698.21 | 591991.4432° 10' | 2.14685° N  | 104° 2' 9.7487 W  |



Azimuths to Grid North  
 True North: -0.16°  
 Magnetic North: 7.02°  
 Magnetic Field  
 Strength: 47939.0snT  
 Dip Angle: 59.99°  
 Date: 6/12/2018  
 Model: USER DEFINED



**LEAM DRILLING SERVICES**  
2010 East Davis, Conroe, Texas 77301  
Phone: 936/756-7618, Fax: 936/756-7595

Plan: Plan #4a (WA #5H/OH)  
Southern Comfort State 24-28-25  
Created By: Nora Tucker Date: 11:16, September 17 2018  
Date: \_\_\_\_\_  
Approved: \_\_\_\_\_ Date: \_\_\_\_\_