



## **Cimarex**

**Eddy County, NM (NAD 83)  
(Medwick)SEC 32\_T-26-S\_R-27-E  
Medwick 32 Fed Com #1H**

**OWB**

**Design: AWB**

## **Standard Survey Report**

**29 June, 2018**





Microsoft  
Survey Report



|           |                               |                              |                             |
|-----------|-------------------------------|------------------------------|-----------------------------|
| Company:  | Cimarex                       | Local Co-ordinate Reference: | Well Medwick 32 Fed Com #1H |
| Project:  | Eddy County, NM (NAD 83)      | TVD Reference:               | KB @ 3251.6usft (H&P 393)   |
| Site:     | (Medwick)SEC 32_T-26-S_R-27-E | MD Reference:                | KB @ 3251.6usft (H&P 393)   |
| Well:     | Medwick 32 Fed Com #1H        | North Reference:             | Grid                        |
| Wellbore: | OWB                           | Survey Calculation Method:   | Minimum Curvature           |
| Design:   | AWB                           | Database:                    | EDM 10_13                   |

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

|                       |                               |              |                 |                   |                   |
|-----------------------|-------------------------------|--------------|-----------------|-------------------|-------------------|
| Site                  | (Medwick)SEC 32_T-26-S_R-27-E |              |                 |                   |                   |
| Site Position:        |                               | Northing:    | 363,391.02 usft | Latitude:         | 31° 59' 56.351 N  |
| From:                 | Map                           | Easting:     | 578,125.66 usft | Longitude:        | 104° 12' 52.771 W |
| Position Uncertainty: | 0.0 usft                      | Slot Radius: | 13-3/16 "       | Grid Convergence: | 0.06 °            |

|                      |                        |                     |           |                 |              |                  |
|----------------------|------------------------|---------------------|-----------|-----------------|--------------|------------------|
| Well                 | Medwick 32 Fed Com #1H |                     |           |                 |              |                  |
| Well Position        | +N/-S                  | 0.0 usft            | Northing: | 362,700.98 usft | Latitude:    | 31° 59' 49.530 N |
|                      | +E/-W                  | 0.0 usft            | Easting:  | 577,365.31 usft | Longitude:   | 104° 13' 1.610 W |
| Position Uncertainty | 0.0 usft               | Wellhead Elevation: | usft      | Ground Level:   | 3,225.6 usft |                  |

|           |            |             |                 |               |                     |
|-----------|------------|-------------|-----------------|---------------|---------------------|
| Wellbore  | OWB        |             |                 |               |                     |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|           | IGRF2015   | 06/01/18    | 7.13            | 59.74         | 47,637.48173998     |

|                   |                         |              |              |               |     |
|-------------------|-------------------------|--------------|--------------|---------------|-----|
| Design            | AWB                     |              |              |               |     |
| Audit Notes:      |                         |              |              |               |     |
| Version:          | 1.0                     | Phase:       | ACTUAL       | Tie On Depth: | 0.0 |
| Vertical Section: | Depth From (TVD) (usft) | +N/-S (usft) | +E/-W (usft) | Direction (°) |     |
|                   | 0.0                     | 0.0          | 0.0          | 356.54        |     |

|                |               |                        |             |                                            |
|----------------|---------------|------------------------|-------------|--------------------------------------------|
| Survey Program | Date 06/29/18 |                        |             |                                            |
| From (usft)    | To (usft)     | Survey (Wellbore)      | Tool Name   | Description                                |
| 171.0          | 6,724.0       | Surcon Corrected (OWB) | MWD+IFR1+MS | OWSG MWD + IFR1 + Multi-Station Correction |
| 6,859.0        | 15,414.0      | Intrepid MWD (OWB)     | MWD         | OWSG MWD - Standard                        |

|                       |                 |             |                       |              |              |                         |                         |                        |                       |  |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|--|
| 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) |  |
| 0.0                   | 0.00            | 0.00        | 0.0                   | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |  |
| 171.0                 | 0.36            | 321.32      | 171.0                 | 0.4          | -0.3         | 0.4                     | 0.21                    | 0.21                   | 0.00                  |  |
| 342.0                 | 0.57            | 255.78      | 342.0                 | 0.6          | -1.5         | 0.7                     | 0.31                    | 0.12                   | -38.33                |  |
| 479.0                 | 0.31            | 332.20      | 479.0                 | 0.8          | -2.3         | 0.9                     | 0.42                    | -0.19                  | 55.78                 |  |
| 571.0                 | 0.53            | 304.31      | 571.0                 | 1.3          | -2.8         | 1.4                     | 0.32                    | 0.24                   | -30.32                |  |
| 661.0                 | 0.50            | 267.52      | 661.0                 | 1.5          | -3.5         | 1.7                     | 0.36                    | -0.03                  | -40.88                |  |
| 753.0                 | 0.45            | 215.55      | 753.0                 | 1.2          | -4.1         | 1.4                     | 0.46                    | -0.05                  | -56.49                |  |
| 844.0                 | 0.59            | 129.61      | 844.0                 | 0.6          | -4.0         | 0.8                     | 0.79                    | 0.15                   | -94.44                |  |
| 938.0                 | 0.48            | 171.07      | 938.0                 | -0.1         | -3.6         | 0.1                     | 0.42                    | -0.12                  | 44.11                 |  |
| 1,033.0               | 0.81            | 143.08      | 1,033.0               | -1.1         | -3.1         | -0.9                    | 0.47                    | 0.35                   | -29.46                |  |



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Survey Report



|           |                               |                              |                             |
|-----------|-------------------------------|------------------------------|-----------------------------|
| Company:  | Cimarex                       | Local Co-ordinate Reference: | Well Medwick 32 Fed Com #1H |
| Project:  | Eddy County, NM (NAD 83)      | TVD Reference:               | KB @ 3251.6usft (H&P 393)   |
| Site:     | (Medwick)SEC 32_T-26-S_R-27-E | MD Reference:                | KB @ 3251.6usft (H&P 393)   |
| Well:     | Medwick 32 Fed Com #1H        | North Reference:             | Grid                        |
| Wellbore: | OWB                           | Survey Calculation Method:   | Minimum Curvature           |
| Design:   | AWB                           | Database:                    | EDM 10_13                   |

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) |
|-----------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|
| 1,127.0                     | 0.77               | 138.50         | 1,127.0                     | -2.1            | -2.3            | -1.9                          | 0.08                          | -0.04                        | -4.87                       |
| 1,221.0                     | 0.86               | 150.32         | 1,221.0                     | -3.2            | -1.5            | -3.1                          | 0.20                          | 0.10                         | 12.57                       |
| 1,410.0                     | 1.10               | 140.58         | 1,409.9                     | -5.8            | 0.3             | -5.8                          | 0.15                          | 0.13                         | -5.15                       |
| 1,504.0                     | 2.48               | 120.62         | 1,503.9                     | -7.5            | 2.7             | -7.7                          | 1.59                          | 1.47                         | -21.23                      |
| 1,693.0                     | 3.48               | 110.70         | 1,692.6                     | -11.6           | 11.6            | -12.3                         | 0.59                          | 0.53                         | -5.25                       |
| 1,816.0                     | 3.59               | 100.86         | 1,815.4                     | -13.7           | 18.8            | -14.8                         | 0.50                          | 0.09                         | -8.00                       |
| 1,971.0                     | 3.51               | 106.59         | 1,970.1                     | -15.9           | 28.1            | -17.6                         | 0.23                          | -0.05                        | 3.70                        |
| 2,065.0                     | 1.02               | 122.54         | 2,064.0                     | -17.2           | 31.6            | -19.1                         | 2.71                          | -2.65                        | 16.97                       |
| 2,159.0                     | 0.85               | 224.71         | 2,158.0                     | -18.2           | 31.8            | -20.0                         | 1.55                          | -0.18                        | 108.69                      |
| 2,254.0                     | 1.51               | 236.85         | 2,253.0                     | -19.3           | 30.3            | -21.1                         | 0.74                          | 0.69                         | 12.78                       |
| 2,348.0                     | 1.43               | 240.43         | 2,347.0                     | -20.6           | 28.2            | -22.3                         | 0.13                          | -0.09                        | 3.81                        |
| 2,443.0                     | 1.40               | 240.82         | 2,441.9                     | -21.8           | 26.2            | -23.3                         | 0.03                          | -0.03                        | 0.41                        |
| 2,538.0                     | 1.32               | 259.91         | 2,536.9                     | -22.5           | 24.1            | -23.9                         | 0.48                          | -0.08                        | 20.09                       |
| 2,632.0                     | 1.65               | 283.67         | 2,630.9                     | -22.4           | 21.7            | -23.6                         | 0.74                          | 0.35                         | 25.28                       |
| 2,726.0                     | 1.89               | 292.03         | 2,724.8                     | -21.5           | 19.0            | -22.6                         | 0.37                          | 0.26                         | 8.89                        |
| 2,821.0                     | 1.76               | 285.84         | 2,819.8                     | -20.5           | 16.1            | -21.4                         | 0.25                          | -0.14                        | -6.52                       |
| 2,915.0                     | 1.66               | 276.89         | 2,913.7                     | -19.9           | 13.4            | -20.7                         | 0.30                          | -0.11                        | -9.52                       |
| 3,010.0                     | 1.78               | 279.09         | 3,008.7                     | -19.5           | 10.5            | -20.1                         | 0.14                          | 0.13                         | 2.32                        |
| 3,104.0                     | 1.88               | 296.16         | 3,102.6                     | -18.6           | 7.7             | -19.1                         | 0.59                          | 0.11                         | 18.16                       |
| 3,199.0                     | 1.95               | 296.39         | 3,197.6                     | -17.2           | 4.9             | -17.5                         | 0.07                          | 0.07                         | 0.24                        |
| 3,293.0                     | 1.84               | 297.24         | 3,291.5                     | -15.8           | 2.1             | -15.9                         | 0.12                          | -0.12                        | 0.90                        |
| 3,388.0                     | 1.16               | 285.10         | 3,386.5                     | -14.9           | -0.2            | -14.8                         | 0.79                          | -0.72                        | -12.78                      |
| 3,482.0                     | 1.01               | 268.09         | 3,480.5                     | -14.6           | -1.9            | -14.5                         | 0.38                          | -0.16                        | -18.10                      |
| 3,576.0                     | 1.02               | 257.87         | 3,574.5                     | -14.9           | -3.6            | -14.6                         | 0.19                          | 0.01                         | -10.87                      |
| 3,671.0                     | 1.22               | 254.94         | 3,669.5                     | -15.3           | -5.4            | -14.9                         | 0.22                          | 0.21                         | -3.08                       |
| 3,850.0                     | 1.29               | 251.13         | 3,848.4                     | -16.4           | -9.1            | -15.9                         | 0.06                          | 0.04                         | -2.13                       |
| 3,954.0                     | 0.54               | 289.03         | 3,952.4                     | -16.7           | -10.7           | -16.0                         | 0.89                          | -0.72                        | 36.44                       |
| 4,143.0                     | 0.86               | 290.24         | 4,141.4                     | -15.9           | -12.9           | -15.1                         | 0.17                          | 0.17                         | 0.64                        |
| 4,237.0                     | 1.13               | 269.91         | 4,235.4                     | -15.6           | -14.5           | -14.7                         | 0.47                          | 0.29                         | -21.63                      |
| 4,332.0                     | 1.10               | 273.56         | 4,330.4                     | -15.6           | -16.3           | -14.6                         | 0.08                          | -0.03                        | 3.84                        |
| 4,426.0                     | 0.63               | 301.54         | 4,424.3                     | -15.3           | -17.7           | -14.2                         | 0.66                          | -0.50                        | 29.77                       |
| 4,615.0                     | 0.56               | 264.76         | 4,613.3                     | -14.8           | -19.5           | -13.6                         | 0.20                          | -0.04                        | -19.46                      |
| 4,709.0                     | 0.54               | 258.62         | 4,707.3                     | -14.9           | -20.4           | -13.7                         | 0.07                          | -0.02                        | -6.53                       |
| 4,898.0                     | 0.63               | 250.27         | 4,896.3                     | -15.5           | -22.2           | -14.1                         | 0.07                          | 0.05                         | -4.42                       |
| 4,992.0                     | 0.74               | 233.94         | 4,990.3                     | -16.0           | -23.2           | -14.6                         | 0.24                          | 0.12                         | -17.37                      |
| 5,087.0                     | 0.43               | 201.34         | 5,085.3                     | -16.7           | -23.8           | -15.2                         | 0.47                          | -0.33                        | -34.32                      |
| 5,181.0                     | 0.14               | 245.77         | 5,179.3                     | -17.1           | -24.0           | -15.6                         | 0.37                          | -0.31                        | 47.27                       |
| 5,276.0                     | 0.13               | 222.32         | 5,274.3                     | -17.2           | -24.2           | -15.7                         | 0.06                          | -0.01                        | -24.68                      |
| 5,370.0                     | 0.76               | 214.93         | 5,368.3                     | -17.8           | -24.7           | -16.3                         | 0.67                          | 0.67                         | -7.86                       |
| 5,464.0                     | 0.85               | 215.27         | 5,462.3                     | -18.8           | -25.4           | -17.3                         | 0.10                          | 0.10                         | 0.36                        |
| 5,559.0                     | 0.30               | 111.07         | 5,557.3                     | -19.5           | -25.6           | -17.9                         | 1.02                          | -0.58                        | -109.68                     |
| 5,653.0                     | 0.78               | 102.23         | 5,651.3                     | -19.7           | -24.7           | -18.2                         | 0.52                          | 0.51                         | -9.40                       |
| 5,748.0                     | 1.09               | 102.56         | 5,746.3                     | -20.1           | -23.2           | -18.6                         | 0.33                          | 0.33                         | 0.35                        |



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Survey Report



|           |                                  |                              |                              |
|-----------|----------------------------------|------------------------------|------------------------------|
| Company:  | Cimarex                          | Local Co-ordinate Reference: | Well: Medwick 32 Fed Com #1H |
| Project:  | Eddy County, NM (NAD 83)         | TVD Reference:               | KB @ 3251.6usft (H&P 393)    |
| Site:     | (Medwick) SEC 32, T-26-S, R-27-E | MD Reference:                | KB @ 3251.6usft (H&P 393)    |
| Well:     | Medwick 32 Fed Com #1H           | North Reference:             | Grid                         |
| Wellbore: | OWB                              | Survey Calculation Method:   | Minimum Curvature            |
| Design:   | AWB                              | Database:                    | EDM 10_13                    |

| 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) |
| 5,842.0                              | 0.63            | 49.42       | 5,840.3               | -19.9        | -22.0        | -18.6                   | 0.93                    | -0.49                  | -56.53                |
| 5,934.0                              | 0.62            | 40.82       | 5,932.3               | -19.2        | -21.2        | -17.9                   | 0.10                    | -0.01                  | -9.35                 |
| 6,125.0                              | 0.21            | 75.33       | 6,123.3               | -18.4        | -20.2        | -17.1                   | 0.24                    | -0.21                  | 18.07                 |
| 6,217.0                              | 1.65            | 295.79      | 6,215.2               | -17.7        | -21.3        | -16.4                   | 1.97                    | 1.57                   | -151.67               |
| 6,408.0                              | 1.59            | 315.81      | 6,406.2               | -14.6        | -25.6        | -13.1                   | 0.30                    | -0.03                  | 10.48                 |
| 6,502.0                              | 0.56            | 335.21      | 6,500.1               | -13.3        | -26.7        | -11.7                   | 1.15                    | -1.10                  | 20.64                 |
| 6,691.0                              | 0.62            | 297.91      | 6,689.1               | -12.0        | -28.0        | -10.3                   | 0.20                    | 0.03                   | -19.74                |
| 6,724.0                              | 0.90            | 292.50      | 6,722.1               | -11.8        | -28.4        | -10.1                   | 0.87                    | 0.85                   | -16.39                |
| TIE ON                               |                 |             |                       |              |              |                         |                         |                        |                       |
| 6,859.0                              | 8.87            | 307.78      | 6,856.5               | -5.0         | -37.6        | -2.7                    | 5.93                    | 5.90                   | 11.32                 |
| 6,906.0                              | 14.71           | 308.36      | 6,902.5               | 0.9          | -45.1        | 3.7                     | 12.43                   | 12.43                  | 1.23                  |
| 6,939.9                              | 19.16           | 308.31      | 6,934.9               | 7.1          | -52.9        | 10.2                    | 13.13                   | 13.13                  | -0.14                 |
| 2nd BSS                              |                 |             |                       |              |              |                         |                         |                        |                       |
| 6,953.0                              | 20.88           | 308.30      | 6,947.3               | 9.8          | -56.4        | 13.2                    | 13.13                   | 13.13                  | -0.10                 |
| 7,000.0                              | 26.95           | 309.63      | 6,990.2               | 21.8         | -71.2        | 26.1                    | 12.96                   | 12.91                  | 2.83                  |
| 7,047.0                              | 33.22           | 309.95      | 7,030.8               | 36.9         | -89.3        | 42.2                    | 13.34                   | 13.34                  | 0.68                  |
| 7,094.0                              | 39.58           | 311.38      | 7,068.7               | 55.1         | -110.4       | 61.6                    | 13.65                   | 13.53                  | 3.04                  |
| 7,142.0                              | 42.63           | 315.58      | 7,104.8               | 76.8         | -133.3       | 84.7                    | 8.57                    | 6.35                   | 8.75                  |
| 7,189.0                              | 46.69           | 316.03      | 7,138.3               | 100.5        | -156.3       | 109.7                   | 8.66                    | 8.64                   | 0.96                  |
| 7,236.0                              | 51.80           | 315.56      | 7,168.9               | 126.0        | -181.1       | 136.7                   | 10.90                   | 10.87                  | -1.00                 |
| 7,283.0                              | 55.62           | 316.04      | 7,196.7               | 153.2        | -207.5       | 165.4                   | 8.17                    | 8.13                   | 1.02                  |
| 7,330.0                              | 58.81           | 316.75      | 7,222.2               | 181.8        | -234.8       | 195.6                   | 6.90                    | 6.79                   | 1.51                  |
| 7,377.0                              | 62.49           | 316.32      | 7,245.2               | 211.5        | -262.9       | 227.0                   | 7.87                    | 7.83                   | -0.91                 |
| 7,425.0                              | 67.66           | 316.64      | 7,265.4               | 243.1        | -292.9       | 260.3                   | 10.79                   | 10.77                  | 0.67                  |
| 7,472.0                              | 69.09           | 319.86      | 7,282.8               | 275.7        | -322.0       | 294.6                   | 7.06                    | 3.04                   | 6.85                  |
| 7,519.0                              | 71.95           | 325.30      | 7,298.4               | 310.8        | -348.9       | 331.3                   | 12.49                   | 6.09                   | 11.57                 |
| 7,566.0                              | 74.60           | 330.88      | 7,312.0               | 349.0        | -372.6       | 370.9                   | 12.69                   | 5.64                   | 11.87                 |
| 7,613.0                              | 77.80           | 335.61      | 7,323.2               | 389.8        | -393.2       | 412.8                   | 11.91                   | 6.81                   | 10.06                 |
| 7,660.0                              | 81.79           | 339.37      | 7,331.5               | 432.5        | -410.9       | 456.5                   | 11.58                   | 8.49                   | 8.00                  |
| 7,707.0                              | 85.85           | 345.43      | 7,336.6               | 477.0        | -425.0       | 501.8                   | 15.46                   | 8.64                   | 12.89                 |
| 7,755.0                              | 88.35           | 350.72      | 7,339.0               | 523.9        | -434.9       | 549.2                   | 12.18                   | 5.21                   | 11.02                 |
| 7,813.0                              | 91.44           | 359.43      | 7,339.1               | 581.6        | -439.8       | 607.1                   | 15.93                   | 5.33                   | 15.02                 |
| 7,913.0                              | 93.06           | 6.14        | 7,335.2               | 681.4        | -435.0       | 706.4                   | 6.90                    | 1.62                   | 6.71                  |
| 8,007.0                              | 91.97           | 5.13        | 7,331.1               | 774.8        | -425.8       | 799.1                   | 1.58                    | -1.16                  | -1.07                 |
| 8,101.0                              | 91.08           | 4.19        | 7,328.6               | 868.5        | -418.1       | 892.1                   | 1.38                    | -0.95                  | -1.00                 |
| 8,195.0                              | 91.88           | 2.27        | 7,326.1               | 962.3        | -412.9       | 985.4                   | 2.21                    | 0.85                   | -2.04                 |
| 8,290.0                              | 90.98           | 1.71        | 7,323.8               | 1,057.2      | -409.6       | 1,080.0                 | 1.12                    | -0.95                  | -0.59                 |
| 8,384.0                              | 91.99           | 1.79        | 7,321.3               | 1,151.1      | -406.7       | 1,173.5                 | 1.08                    | 1.07                   | 0.09                  |
| 8,479.0                              | 91.30           | 0.88        | 7,318.6               | 1,246.1      | -404.5       | 1,268.2                 | 1.20                    | -0.73                  | -0.96                 |
| 8,573.0                              | 89.35           | 359.91      | 7,318.1               | 1,340.0      | -403.8       | 1,362.0                 | 2.32                    | -2.07                  | -1.03                 |
| 8,633.4                              | 89.64           | 359.65      | 7,318.6               | 1,400.4      | -404.1       | 1,422.3                 | 0.64                    | 0.47                   | -0.43                 |
| FTP @ 8633.4' MD, 330' FSL, 604' FWL |                 |             |                       |              |              |                         |                         |                        |                       |
| 8,668.0                              | 89.80           | 359.50      | 7,318.8               | 1,435.0      | -404.3       | 1,456.8                 | 0.64                    | 0.47                   | -0.43                 |
| 8,762.0                              | 90.81           | 359.03      | 7,318.3               | 1,529.0      | -405.5       | 1,550.7                 | 1.19                    | 1.07                   | -0.50                 |

|           |                                |                              |                             |
|-----------|--------------------------------|------------------------------|-----------------------------|
| Company:  | Cimarex                        | Local Co-ordinate Reference: | Well Medwick 32 Fed Com #1H |
| Project:  | Eddy County, NM (NAD 83)       | TVD Reference:               | KB @ 3251.6usft (H&P 393)   |
| Site:     | (Medwick) SEC 32_T-26-S_R-27-E | MD Reference:                | KB @ 3251.6usft (H&P 393)   |
| Well:     | Medwick 32 Fed Com #1H         | North Reference:             | Grid                        |
| Wellbore: | OWB                            | Survey Calculation Method:   | Minimum Curvature           |
| Design:   | AWB                            | Database:                    | EDM 10_13                   |

## 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) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 8,857.0               | 89.04           | 359.01      | 7,318.4               | 1,624.0      | -407.1       | 1,645.6                 | 1.86                    | -1.86                  | -0.02                 |
| 8,951.0               | 86.58           | 358.88      | 7,322.0               | 1,717.9      | -408.9       | 1,739.4                 | 2.62                    | -2.62                  | -0.14                 |
| 9,046.0               | 86.17           | 358.28      | 7,328.0               | 1,812.7      | -411.2       | 1,834.2                 | 0.76                    | -0.43                  | -0.63                 |
| 9,140.0               | 87.56           | 358.19      | 7,333.1               | 1,906.5      | -414.1       | 1,928.0                 | 1.48                    | 1.48                   | -0.10                 |
| 9,234.0               | 89.81           | 358.35      | 7,335.3               | 2,000.4      | -416.9       | 2,021.9                 | 2.40                    | 2.39                   | 0.17                  |
| 9,329.0               | 91.76           | 358.84      | 7,334.0               | 2,095.4      | -419.3       | 2,116.9                 | 2.12                    | 2.05                   | 0.52                  |
| 9,423.0               | 93.05           | 359.43      | 7,330.1               | 2,189.3      | -420.7       | 2,210.7                 | 1.51                    | 1.37                   | 0.63                  |
| 9,518.0               | 91.43           | 359.55      | 7,326.3               | 2,284.2      | -421.5       | 2,305.5                 | 1.71                    | -1.71                  | 0.13                  |
| 9,612.0               | 91.73           | 359.98      | 7,323.7               | 2,378.2      | -421.9       | 2,399.3                 | 0.56                    | 0.32                   | 0.46                  |
| 9,706.0               | 90.33           | 0.60        | 7,322.1               | 2,472.2      | -421.5       | 2,493.1                 | 1.63                    | -1.49                  | 0.66                  |
| 9,801.0               | 88.30           | 0.32        | 7,323.2               | 2,567.2      | -420.7       | 2,587.8                 | 2.16                    | -2.14                  | -0.29                 |
| 9,895.0               | 89.12           | 0.25        | 7,325.3               | 2,661.1      | -420.2       | 2,681.6                 | 0.88                    | 0.87                   | -0.07                 |
| 9,990.0               | 89.54           | 0.51        | 7,326.4               | 2,756.1      | -419.6       | 2,776.4                 | 0.52                    | 0.44                   | 0.27                  |
| 10,084.0              | 87.44           | 0.33        | 7,328.9               | 2,850.1      | -418.9       | 2,870.1                 | 2.24                    | -2.23                  | -0.19                 |
| 10,179.0              | 87.31           | 359.01      | 7,333.2               | 2,945.0      | -419.4       | 2,964.9                 | 1.39                    | -0.14                  | -1.39                 |
| 10,273.0              | 88.27           | 358.85      | 7,336.9               | 3,038.9      | -421.2       | 3,058.8                 | 1.04                    | 1.02                   | -0.17                 |
| 10,367.0              | 88.58           | 358.47      | 7,339.5               | 3,132.8      | -423.4       | 3,152.7                 | 0.52                    | 0.33                   | -0.40                 |
| 10,461.0              | 89.82           | 358.53      | 7,340.8               | 3,226.8      | -425.9       | 3,246.6                 | 1.32                    | 1.32                   | 0.06                  |
| 10,555.0              | 90.96           | 359.39      | 7,340.1               | 3,320.8      | -427.6       | 3,340.5                 | 1.52                    | 1.21                   | 0.91                  |
| 10,649.0              | 91.88           | 0.13        | 7,337.8               | 3,414.7      | -428.0       | 3,434.3                 | 1.26                    | 0.98                   | 0.79                  |
| 10,744.0              | 91.85           | 359.59      | 7,334.7               | 3,509.7      | -428.2       | 3,529.1                 | 0.57                    | -0.03                  | -0.57                 |
| 10,838.0              | 91.24           | 358.93      | 7,332.2               | 3,603.6      | -429.4       | 3,623.0                 | 0.96                    | -0.65                  | -0.70                 |
| 10,932.0              | 92.68           | 359.69      | 7,329.0               | 3,697.6      | -430.5       | 3,716.8                 | 1.73                    | 1.53                   | 0.81                  |
| 11,029.0              | 92.94           | 0.09        | 7,324.2               | 3,794.5      | -430.7       | 3,813.5                 | 0.49                    | 0.27                   | 0.41                  |
| 11,124.0              | 88.89           | 1.34        | 7,322.7               | 3,889.4      | -429.5       | 3,908.2                 | 4.46                    | -4.26                  | 1.32                  |
| 11,218.0              | 86.81           | 1.19        | 7,326.2               | 3,983.3      | -427.5       | 4,001.8                 | 2.22                    | -2.21                  | -0.16                 |
| 11,313.0              | 87.27           | 359.52      | 7,331.1               | 4,078.2      | -426.9       | 4,096.5                 | 1.82                    | 0.48                   | -1.76                 |
| 11,407.0              | 88.05           | 359.48      | 7,335.0               | 4,172.1      | -427.7       | 4,190.3                 | 0.83                    | 0.83                   | -0.04                 |
| 11,501.0              | 86.97           | 358.15      | 7,339.0               | 4,266.0      | -429.6       | 4,284.1                 | 1.82                    | -1.15                  | -1.41                 |
| 11,595.0              | 87.46           | 357.54      | 7,343.6               | 4,359.8      | -433.2       | 4,378.0                 | 0.83                    | 0.52                   | -0.65                 |
| 11,690.0              | 88.21           | 357.10      | 7,347.2               | 4,454.6      | -437.6       | 4,472.9                 | 0.92                    | 0.79                   | -0.46                 |
| 11,784.0              | 88.59           | 356.48      | 7,349.8               | 4,548.5      | -442.9       | 4,566.9                 | 0.77                    | 0.40                   | -0.66                 |
| 11,879.0              | 89.12           | 357.00      | 7,351.7               | 4,643.3      | -448.3       | 4,661.9                 | 0.78                    | 0.56                   | 0.55                  |
| 11,973.0              | 90.15           | 356.82      | 7,352.3               | 4,737.1      | -453.3       | 4,755.9                 | 1.11                    | 1.10                   | -0.19                 |
| 12,068.0              | 90.68           | 358.30      | 7,351.6               | 4,832.1      | -457.4       | 4,850.8                 | 1.65                    | 0.56                   | 1.56                  |
| 12,162.0              | 91.63           | 358.81      | 7,349.7               | 4,926.0      | -459.8       | 4,944.8                 | 1.15                    | 1.01                   | 0.54                  |
| 12,256.0              | 92.23           | 359.07      | 7,346.6               | 5,019.9      | -461.5       | 5,038.6                 | 0.70                    | 0.64                   | 0.28                  |
| 12,351.0              | 90.74           | 359.97      | 7,344.1               | 5,114.9      | -462.3       | 5,133.5                 | 1.83                    | -1.57                  | 0.95                  |
| 12,445.0              | 90.69           | 359.61      | 7,342.9               | 5,208.9      | -462.6       | 5,227.3                 | 0.39                    | -0.05                  | -0.38                 |
| 12,540.0              | 91.69           | 359.30      | 7,341.0               | 5,303.9      | -463.5       | 5,322.2                 | 1.10                    | 1.05                   | -0.33                 |
| 12,634.0              | 92.29           | 358.30      | 7,337.7               | 5,397.8      | -465.5       | 5,416.0                 | 1.24                    | 0.64                   | -1.06                 |
| 12,728.0              | 92.38           | 356.64      | 7,333.9               | 5,491.6      | -469.6       | 5,509.9                 | 1.77                    | 0.10                   | -1.77                 |
| 12,818.0              | 93.82           | 355.20      | 7,329.0               | 5,581.2      | -476.0       | 5,599.8                 | 2.26                    | 1.60                   | -1.60                 |



Microsoft  
Survey Report



|           |                                |                              |                             |
|-----------|--------------------------------|------------------------------|-----------------------------|
| Company:  | Cimarex                        | Local Co-ordinate Reference: | Well Medwick 32 Fed Com #1H |
| Project:  | Eddy County, NM (NAD 83)       | TVD Reference:               | KB @ 3251.6usft (H&P 393)   |
| Site:     | (Medwick) SEC 32_T-26-S_R-27-E | MD Reference:                | KB @ 3251.6usft (H&P 393)   |
| Well:     | Medwick 32 Fed.Com #1H         | North Reference:             | Grid                        |
| Wellbore: | OWB                            | Survey Calculation Method:   | Minimum Curvature           |
| Design:   | AWB                            | Database:                    | EDM 10_13                   |

| 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) |
| 12,912.0                              | 91.46           | 358.39      | 7,324.7               | 5,675.0      | -481.3       | 5,693.7                 | 4.22                    | -2.51                  | 3.39                  |
| 13,007.0                              | 87.72           | 0.72        | 7,325.4               | 5,769.9      | -482.0       | 5,788.5                 | 4.64                    | -3.94                  | 2.45                  |
| 13,101.0                              | 87.32           | 1.54        | 7,329.4               | 5,863.8      | -480.2       | 5,882.1                 | 0.97                    | -0.43                  | 0.87                  |
| 13,195.0                              | 88.07           | 1.61        | 7,333.2               | 5,957.7      | -477.6       | 5,975.7                 | 0.80                    | 0.80                   | 0.07                  |
| 13,289.0                              | 88.12           | 2.20        | 7,336.3               | 6,051.6      | -474.5       | 6,069.2                 | 0.63                    | 0.05                   | 0.63                  |
| 13,384.0                              | 86.95           | 0.96        | 7,340.4               | 6,146.5      | -471.8       | 6,163.8                 | 1.79                    | -1.23                  | -1.31                 |
| 13,478.0                              | 86.95           | 0.38        | 7,345.4               | 6,240.4      | -470.8       | 6,257.4                 | 0.62                    | 0.00                   | -0.62                 |
| 13,572.0                              | 87.81           | 0.53        | 7,349.7               | 6,334.3      | -470.0       | 6,351.1                 | 0.93                    | 0.91                   | 0.16                  |
| 13,667.0                              | 88.43           | 0.49        | 7,352.8               | 6,429.2      | -469.2       | 6,445.8                 | 0.65                    | 0.65                   | -0.04                 |
| 13,761.0                              | 89.14           | 0.26        | 7,354.8               | 6,523.2      | -468.5       | 6,539.6                 | 0.79                    | 0.76                   | -0.24                 |
| 13,856.0                              | 87.50           | 0.54        | 7,357.6               | 6,618.1      | -467.9       | 6,634.3                 | 1.75                    | -1.73                  | 0.29                  |
| 13,950.0                              | 87.76           | 0.68        | 7,361.5               | 6,712.0      | -466.9       | 6,728.0                 | 0.31                    | 0.28                   | 0.15                  |
| 14,044.0                              | 88.10           | 359.48      | 7,364.9               | 6,806.0      | -466.8       | 6,821.7                 | 1.33                    | 0.36                   | -1.28                 |
| 14,138.0                              | 88.36           | 359.34      | 7,367.8               | 6,899.9      | -467.7       | 6,915.6                 | 0.31                    | 0.28                   | -0.15                 |
| 14,233.0                              | 87.70           | 358.59      | 7,371.1               | 6,994.9      | -469.4       | 7,010.4                 | 1.05                    | -0.69                  | -0.79                 |
| 14,327.0                              | 88.55           | 358.20      | 7,374.1               | 7,088.8      | -472.1       | 7,104.3                 | 0.99                    | 0.90                   | -0.41                 |
| 14,421.0                              | 89.59           | 358.00      | 7,375.7               | 7,182.7      | -475.2       | 7,198.3                 | 1.13                    | 1.11                   | -0.21                 |
| 14,515.0                              | 87.65           | 358.01      | 7,377.9               | 7,276.6      | -478.5       | 7,292.2                 | 2.06                    | -2.06                  | 0.01                  |
| 14,610.0                              | 87.46           | 358.16      | 7,382.0               | 7,371.5      | -481.6       | 7,387.1                 | 0.25                    | -0.20                  | 0.16                  |
| 14,704.0                              | 87.77           | 358.08      | 7,385.9               | 7,465.3      | -484.7       | 7,481.0                 | 0.34                    | 0.33                   | -0.09                 |
| 14,799.0                              | 88.21           | 357.98      | 7,389.2               | 7,560.2      | -488.0       | 7,575.9                 | 0.47                    | 0.46                   | -0.11                 |
| 14,893.0                              | 86.58           | 358.33      | 7,393.5               | 7,654.1      | -491.0       | 7,669.8                 | 1.77                    | -1.73                  | 0.37                  |
| 14,988.0                              | 86.22           | 358.38      | 7,399.5               | 7,748.9      | -493.7       | 7,764.5                 | 0.38                    | -0.38                  | 0.05                  |
| 15,082.0                              | 86.15           | 358.57      | 7,405.7               | 7,842.6      | -496.2       | 7,858.3                 | 0.21                    | -0.07                  | 0.20                  |
| 15,176.0                              | 85.06           | 358.13      | 7,412.9               | 7,936.3      | -498.9       | 7,951.9                 | 1.25                    | -1.16                  | -0.47                 |
| 15,270.0                              | 85.30           | 357.00      | 7,420.8               | 8,029.9      | -502.9       | 8,045.6                 | 1.22                    | 0.26                   | -1.20                 |
| 15,351.0                              | 85.56           | 357.05      | 7,427.3               | 8,110.5      | -507.1       | 8,126.3                 | 0.33                    | 0.32                   | 0.06                  |
| LAST SVY                              |                 |             |                       |              |              |                         |                         |                        |                       |
| 15,414.0                              | 85.56           | 357.05      | 7,432.1               | 8,173.2      | -510.3       | 8,189.1                 | 0.00                    | 0.00                   | 0.00                  |
| PTB @ 15414.0' MD, 332' FNL, 583' FWL |                 |             |                       |              |              |                         |                         |                        |                       |



|                  |                               |                                     |                             |
|------------------|-------------------------------|-------------------------------------|-----------------------------|
| <b>Company:</b>  | Cimarex                       | <b>Local Co-ordinate Reference:</b> | Well Medwick 32 Fed Com #1H |
| <b>Project:</b>  | Eddy County, NM (NAD 83)      | <b>TVD Reference:</b>               | KB @ 3251.6usft (H&P 393)   |
| <b>Site:</b>     | (Medwick)SEC 32_T-26-S_R-27-E | <b>MD Reference:</b>                | KB @ 3251.6usft (H&P 393)   |
| <b>Well:</b>     | Medwick 32 Fed Com #1H        | <b>North Reference:</b>             | Grid                        |
| <b>Wellbore:</b> | QWB                           | <b>Survey Calculation Method:</b>   | Minimum Curvature           |
| <b>Design:</b>   | AWB                           | <b>Database:</b>                    | EDM_10_13                   |

## Design Targets

| Target Name                                                                                           | Dip Angle<br>(°) | Dip Dir.<br>(°) | TVD<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Northing<br>(usft) | Easting<br>(usft) | Latitude         | Longitude        |
|-------------------------------------------------------------------------------------------------------|------------------|-----------------|---------------|-----------------|-----------------|--------------------|-------------------|------------------|------------------|
| - hit/miss target                                                                                     |                  |                 |               |                 |                 |                    |                   |                  |                  |
| - Shape                                                                                               |                  |                 |               |                 |                 |                    |                   |                  |                  |
| SHL- 1071' FSL, 1302'                                                                                 | 0.00             | 0.00            | 0.0           | 0.0             | 0.0             | 362,700.98         | 577,365.31        | 31° 59' 49.530 N | 104° 13' 1.610 W |
| - actual wellpath hits target center                                                                  |                  |                 |               |                 |                 |                    |                   |                  |                  |
| - Point                                                                                               |                  |                 |               |                 |                 |                    |                   |                  |                  |
| KOP BOX-20' E & 20'                                                                                   | 0.00             | 0.00            | 6,812.6       | 0.0             | 0.0             | 362,700.98         | 577,365.31        | 31° 59' 49.530 N | 104° 13' 1.610 W |
| - actual wellpath misses target center by 34.0usft at 6812.9usft MD (6810.8 TVD, -8.7 N, -32.8 E)     |                  |                 |               |                 |                 |                    |                   |                  |                  |
| - Rectangle (sides W220.0 H180.0 D0.0)                                                                |                  |                 |               |                 |                 |                    |                   |                  |                  |
| FTP (Mediwick 32 Fed                                                                                  | 1.21             | 179.28          | 7,320.7       | 1,400.5         | -408.4          | 364,101.48         | 576,956.88        | 32° 0' 3.395 N   | 104° 13' 6.336 W |
| - actual wellpath misses target center by 4.8usft at 8633.5usft MD (7318.6 TVD, 1400.5 N, -404.1 E)   |                  |                 |               |                 |                 |                    |                   |                  |                  |
| - Rectangle (sides W10.0 H13.5 D10.0)                                                                 |                  |                 |               |                 |                 |                    |                   |                  |                  |
| TRGT #1 (Medwick 32                                                                                   | -0.42            | 179.28          | 7,350.0       | 5,522.4         | -460.3          | 368,223.34         | 576,904.96        | 32° 0' 44.187 N  | 104° 13' 6.888 W |
| - actual wellpath misses target center by 20.8usft at 12757.1usft MD (7332.5 TVD, 5520.6 N, -471.5 E) |                  |                 |               |                 |                 |                    |                   |                  |                  |
| - Rectangle (sides W10.0 H4,117.5 D10.0)                                                              |                  |                 |               |                 |                 |                    |                   |                  |                  |
| PBHL (Medwick 32 Fe                                                                                   | -1.41            | 179.28          | 7,415.0       | 8,175.3         | -493.8          | 370,876.25         | 576,871.55        | 32° 1' 10.441 N  | 104° 13' 7.243 W |
| - actual wellpath misses target center by 23.9usft at 15413.8usft MD (7432.1 TVD, 8173.1 N, -510.3 E) |                  |                 |               |                 |                 |                    |                   |                  |                  |
| - Rectangle (sides W5.0 H2,650.0 D10.0)                                                               |                  |                 |               |                 |                 |                    |                   |                  |                  |

## Formations

| Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Name    | Lithology | Dip<br>(°) | Dip<br>Direction<br>(°) |
|-----------------------------|-----------------------------|---------|-----------|------------|-------------------------|
| 6,939.9                     | 6,934.9                     | 2nd BSS |           | -0.41      |                         |

## Design Annotations

| Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Local Coordinates |                 |                                       |
|-----------------------------|-----------------------------|-------------------|-----------------|---------------------------------------|
|                             |                             | +N/-S<br>(usft)   | +E/-W<br>(usft) | Comment                               |
| 6,724.0                     | 6,722.1                     | -11.8             | -28.4           | TIE ON                                |
| 8,633.4                     | 7,318.6                     | 1,400.4           | -404.1          | FTP @ 8633.4' MD, 330' FSL, 604' FWL  |
| 15,351.0                    | 7,427.3                     | 8,110.5           | -507.1          | LAST SVY                              |
| 15,414.0                    | 7,432.1                     | 8,173.2           | -510.3          | PTB @ 15414.0' MD, 332' FNL, 583' FWL |

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