

2-22-2010

# Cimarex Energy Co.

Eddy County (NM83E)

Sec 12-T25S-R26E

Marquardt Fed #9

Wellbore #1

Survey: MWD Survey

## Standard Survey Report

04 December, 2009

MR

# Great White Directional Services

## Survey Report

|                              |                                                    |  |
|------------------------------|----------------------------------------------------|--|
| Company: Cimarex Energy Co.  | Local Co-ordinate Reference: Well Marquardt Fed #9 |  |
| Project: Eddy County (NM83E) | TVD Reference: WELL @ 0.0usft (Original Well Elev) |  |
| Site: Sec 12-T25S-R26E       | MD Reference: WELL @ 0.0usft (Original Well Elev)  |  |
| Well: Marquardt Fed #9       | North Reference: Grid                              |  |
| Wellbore: Wellbore #1        | Survey Calculation Method: Minimum Curvature       |  |
| Design: Wellbore #1          | Database: EDM 5000 1 Single User Db                |  |

|                                      |                              |  |
|--------------------------------------|------------------------------|--|
| Project: Eddy County (NM83E)         |                              |  |
| Map System: US State Plane 1983      | System Datum: Mean Sea Level |  |
| Geo Datum: North American Datum 1983 |                              |  |
| Map Zone: New Mexico Eastern Zone    |                              |  |

|                                |                           |                              |
|--------------------------------|---------------------------|------------------------------|
| Site: Sec 12-T25S-R26E         |                           |                              |
| Site Position: Map             | Northing: 414,002.10 usft | Latitude: 32° 8' 17.314 N    |
| From: Map                      | Easting: 567,317.70 usft  | Longitude: 104° 14' 57.829 W |
| Position Uncertainty: 0.0 usft | Slot Radius: 13-3/16 "    | Grid Convergence: 0.04 °     |

|                                |                           |                              |
|--------------------------------|---------------------------|------------------------------|
| Well: Marquardt Fed #9         |                           |                              |
| Well Position: +N-S 0.0 usft   | Northing: 416,306.00 usft | Latitude: 32° 8' 40.122 N    |
| +E-W 0.0 usft                  | Easting: 566,192.16 usft  | Longitude: 104° 15' 10.900 W |
| Position Uncertainty: 0.0 usft | Wellhead Elevation: usft  | Ground Level: 0.0 usft       |

|                       |             |                     |
|-----------------------|-------------|---------------------|
| Wellbore: Wellbore #1 |             |                     |
| Magnetics: Model Name | Sample Date | Declination         |
| IGRF200510            | 2009/08/06  | (°)                 |
|                       |             | Dip Angle (°)       |
|                       |             | Field Strength (nT) |
|                       |             | 8.10 60.05 48,731   |

|                     |                         |                   |
|---------------------|-------------------------|-------------------|
| Design: Wellbore #1 |                         |                   |
| Audit Notes:        |                         |                   |
| Version: 1.0        | Phase: ACTUAL           | Tie On Depth: 0.0 |
| Vertical Section:   | Depth From (TVD) (usft) | +N-S (usft)       |
|                     | 0.0                     | 0.0               |
|                     |                         | +E-W (usft)       |
|                     |                         | 0.0               |
|                     |                         | Direction (°)     |
|                     |                         | 110.87            |

|                |                  |                           |
|----------------|------------------|---------------------------|
| Survey Program | Date: 2009/08/26 |                           |
| From (usft)    | To (usft)        | Survey (Wellbore)         |
| 100.0          | 2,811.8          | Gyro Survey (Wellbore #1) |
| 2,893.0        | 5,228.0          | MWD Survey (Wellbore #1)  |
|                |                  | Tool Name                 |
|                |                  | MWD                       |
|                |                  | Description               |
|                |                  | MWD - Standard            |
|                |                  | MWD - Standard            |

| Measured Depth (usft)   | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N-S (usft) | +E-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|-------------------------|-----------------|-------------|-----------------------|-------------|-------------|-------------------------|-----------------------|----------------------|---------------------|
| 2,811.8                 | 1.46            | 120.20      | 2,808.6               | -36.2       | 94.8        | 101.5                   | 0.00                  | 0.00                 | 0.00                |
| 2,811.9                 | 1.46            | 120.20      | 2,808.7               | -36.2       | 94.8        | 101.5                   | 0.00                  | 0.00                 | 0.00                |
| <b>Tie - On to Gyro</b> |                 |             |                       |             |             |                         |                       |                      |                     |
| 2,893.0                 | 2.50            | 164.20      | 2,889.8               | -38.4       | 96.2        | 103.6                   | 2.18                  | 1.28                 | 54.25               |
| <b>First MWD Survey</b> |                 |             |                       |             |             |                         |                       |                      |                     |
| 2,925.0                 | 10.50           | 187.70      | 2,921.5               | -42.0       | 96.0        | 104.7                   | 25.83                 | 25.00                | 73.44               |
| 2,956.0                 | 22.60           | 196.10      | 2,951.2               | -50.5       | 94.0        | 105.8                   | 39.69                 | 39.03                | 27.10               |
| 2,987.0                 | 30.40           | 188.00      | 2,978.9               | -64.0       | 91.2        | 108.0                   | 27.68                 | 25.16                | -26.13              |
| 3,019.0                 | 36.70           | 179.80      | 3,005.6               | -81.6       | 90.1        | 113.3                   | 24.21                 | 19.69                | -25.63              |

# Great White Directional Services

## Survey Report

|                  |                     |                                     |                                     |
|------------------|---------------------|-------------------------------------|-------------------------------------|
| <b>Company:</b>  | Cimarex Energy Co.  | <b>Local Co-ordinate Reference:</b> | Well Marquardt Fed #9               |
| <b>Project:</b>  | Eddy County (NM83E) | <b>TVD Reference:</b>               | WELL @ 0.0usft (Original Well Elev) |
| <b>Site:</b>     | Sec 12-T25S-R26E    | <b>MD Reference:</b>                | WELL @ 0.0usft (Original Well Elev) |
| <b>Well:</b>     | Marquardt Fed #9    | <b>North Reference:</b>             | Grid                                |
| <b>Wellbore:</b> | Wellbore #1         | <b>Survey Calculation Method:</b>   | Minimum Curvature                   |
| <b>Design:</b>   | Wellbore #1         | <b>Database:</b>                    | 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 (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |  |
| 3,050.0               | 43.80           | 176.30      | 3,029.2               | -101.6       | 90.8         | 121.1                   | 24.03                 | 22.90                | -11.29              |  |
| 3,082.0               | 52.00           | 173.20      | 3,050.7               | -125.2       | 93.1         | 131.6                   | 26.61                 | 25.63                | -9.69               |  |
| 3,114.0               | 62.30           | 173.40      | 3,068.0               | -151.9       | 96.2         | 144.0                   | 32.19                 | 32.19                | 0.63                |  |
| 3,146.0               | 72.30           | 171.80      | 3,080.3               | -181.1       | 100.0        | 158.0                   | 31.59                 | 31.25                | -5.00               |  |
| 3,163.0               | 79.10           | 172.20      | 3,084.5               | -197.4       | 102.3        | 165.9                   | 40.06                 | 40.00                | 2.35                |  |
| 3,177.0               | 84.80           | 172.90      | 3,086.5               | -211.2       | 104.1        | 172.5                   | 41.01                 | 40.71                | 5.00                |  |
| 3,208.0               | 89.70           | 175.10      | 3,088.0               | -242.0       | 107.3        | 186.5                   | 17.32                 | 15.81                | 7.10                |  |
| 3,239.0               | 88.80           | 175.70      | 3,088.4               | -272.9       | 109.8        | 199.8                   | 3.49                  | -2.90                | 1.94                |  |
| 3,271.0               | 89.30           | 177.20      | 3,088.9               | -304.8       | 111.8        | 213.1                   | 4.94                  | 1.56                 | 4.69                |  |
| 3,302.0               | 90.00           | 177.70      | 3,089.1               | -335.8       | 113.2        | 225.4                   | 2.77                  | 2.26                 | 1.61                |  |
| 3,334.0               | 90.70           | 178.30      | 3,088.9               | -367.7       | 114.3        | 237.8                   | 2.88                  | 2.19                 | 1.88                |  |
| 3,366.0               | 90.30           | 179.60      | 3,088.6               | -399.7       | 114.9        | 249.8                   | 4.25                  | -1.25                | 4.06                |  |
| 3,397.0               | 89.60           | 181.20      | 3,088.7               | -430.7       | 114.7        | 260.6                   | 5.63                  | -2.26                | 5.16                |  |
| 3,429.0               | 90.70           | 181.90      | 3,088.6               | -462.7       | 113.8        | 271.2                   | 4.07                  | 3.44                 | 2.19                |  |
| 3,460.0               | 91.60           | 182.90      | 3,088.0               | -493.7       | 112.5        | 281.0                   | 4.34                  | 2.90                 | 3.23                |  |
| 3,491.0               | 91.70           | 184.20      | 3,087.1               | -524.6       | 110.6        | 290.2                   | 4.20                  | 0.32                 | 4.19                |  |
| 3,523.0               | 91.60           | 184.60      | 3,086.1               | -556.5       | 108.1        | 299.3                   | 1.29                  | -0.31                | 1.25                |  |
| 3,555.0               | 91.50           | 185.00      | 3,085.3               | -588.4       | 105.4        | 308.2                   | 1.29                  | -0.31                | 1.25                |  |
| 3,587.0               | 91.00           | 186.50      | 3,084.6               | -620.2       | 102.2        | 316.5                   | 4.94                  | -1.56                | 4.69                |  |
| 3,618.0               | 90.10           | 185.20      | 3,084.3               | -651.1       | 99.1         | 324.5                   | 5.10                  | -2.90                | -4.19               |  |
| 3,650.0               | 89.70           | 183.90      | 3,084.3               | -682.9       | 96.5         | 333.5                   | 4.25                  | -1.25                | -4.06               |  |
| 3,682.0               | 90.40           | 183.90      | 3,084.3               | -714.9       | 94.4         | 342.9                   | 2.19                  | 2.19                 | 0.00                |  |
| 3,713.0               | 89.60           | 185.10      | 3,084.3               | -745.8       | 91.9         | 351.6                   | 4.65                  | -2.58                | 3.87                |  |
| 3,745.0               | 90.00           | 186.00      | 3,084.4               | -777.6       | 88.8         | 360.1                   | 3.08                  | 1.25                 | 2.81                |  |
| 3,777.0               | 90.70           | 187.70      | 3,084.2               | -809.4       | 85.0         | 367.8                   | 5.75                  | 2.19                 | 5.31                |  |
| 3,809.0               | 90.50           | 189.90      | 3,083.9               | -841.0       | 80.1         | 374.5                   | 6.90                  | -0.63                | 6.88                |  |
| 3,841.0               | 90.70           | 190.00      | 3,083.6               | -872.5       | 74.6         | 380.6                   | 0.70                  | 0.63                 | 0.31                |  |
| 3,873.0               | 90.70           | 190.30      | 3,083.2               | -904.0       | 69.0         | 386.5                   | 0.94                  | 0.00                 | 0.94                |  |
| 3,905.0               | 89.10           | 190.30      | 3,083.2               | -935.5       | 63.2         | 392.4                   | 5.00                  | -5.00                | 0.00                |  |
| 3,937.0               | 89.70           | 190.10      | 3,083.6               | -967.0       | 57.6         | 398.3                   | 1.98                  | 1.88                 | -0.63               |  |
| 3,969.0               | 91.40           | 190.80      | 3,083.2               | -998.5       | 51.8         | 404.1                   | 5.75                  | 5.31                 | 2.19                |  |
| 4,000.0               | 91.20           | 190.70      | 3,082.5               | -1,028.9     | 46.0         | 409.6                   | 0.72                  | -0.65                | -0.32               |  |
| 4,032.0               | 89.50           | 189.90      | 3,082.3               | -1,060.4     | 40.3         | 415.4                   | 5.87                  | -5.31                | -2.50               |  |
| 4,063.0               | 89.60           | 189.70      | 3,082.6               | -1,090.9     | 35.0         | 421.4                   | 0.72                  | 0.32                 | -0.65               |  |
| 4,095.0               | 89.90           | 189.80      | 3,082.7               | -1,122.5     | 29.6         | 427.6                   | 0.99                  | 0.94                 | 0.31                |  |
| 4,127.0               | 89.30           | 188.80      | 3,083.0               | -1,154.1     | 24.4         | 434.0                   | 3.64                  | -1.88                | -3.13               |  |
| 4,159.0               | 89.50           | 188.40      | 3,083.3               | -1,185.7     | 19.6         | 440.8                   | 1.40                  | 0.63                 | -1.25               |  |
| 4,191.0               | 90.00           | 188.40      | 3,083.4               | -1,217.4     | 14.9         | 447.7                   | 1.56                  | 1.56                 | 0.00                |  |
| 4,222.0               | 90.50           | 187.90      | 3,083.3               | -1,248.0     | 10.5         | 454.5                   | 2.28                  | 1.61                 | -1.61               |  |
| 4,254.0               | 90.90           | 186.80      | 3,082.9               | -1,279.8     | 6.4          | 462.0                   | 3.66                  | 1.25                 | -3.44               |  |
| 4,285.0               | 91.40           | 186.90      | 3,082.3               | -1,310.6     | 2.8          | 469.5                   | 1.64                  | 1.61                 | 0.32                |  |
| 4,317.0               | 90.80           | 186.30      | 3,081.7               | -1,342.3     | -0.9         | 477.4                   | 2.65                  | -1.88                | -1.88               |  |
| 4,345.0               | 89.80           | 185.20      | 3,081.5               | -1,370.2     | -3.7         | 484.7                   | 5.31                  | -3.57                | -3.93               |  |

## Great White Directional Services

## Survey Report

Company: Cimarex Energy Co.  
 Project: Eddy County (NM83E)  
 Site: Sec 12-T25S-R26E  
 Well: Marquardt Fed #9  
 Wellbore: Wellbore #1  
 Design: Wellbore #1

Local Co-ordinate Reference: Well Marquardt Fed #9  
 TVD Reference: WELL @ 0.0usft (Original Well Elev)  
 MD Reference: WELL @ 0.0usft (Original Well Elev)  
 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 (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-----------------------|----------------------|---------------------|
| 4,381.0               | 89.80           | 185.60      | 3,081.6               | -1,406.0     | -7.1         | 494.3                   | 1.11                  | 0.00                 | 1.11                |
| 4,412.0               | 89.90           | 185.60      | 3,081.7               | -1,436.9     | -10.1        | 502.5                   | 0.32                  | 0.32                 | 0.00                |
| 4,444.0               | 89.80           | 185.20      | 3,081.8               | -1,468.7     | -13.2        | 511.0                   | 1.29                  | -0.31                | -1.25               |
| 4,476.0               | 90.20           | 185.30      | 3,081.8               | -1,500.6     | -16.1        | 519.6                   | 1.29                  | 1.25                 | 0.31                |
| 4,507.0               | 90.20           | 185.00      | 3,081.7               | -1,531.5     | -18.9        | 528.0                   | 0.97                  | 0.00                 | -0.97               |
| 4,540.0               | 90.50           | 185.20      | 3,081.5               | -1,564.4     | -21.8        | 537.0                   | 1.09                  | 0.91                 | 0.61                |
| 4,571.0               | 90.90           | 184.80      | 3,081.1               | -1,595.2     | -24.5        | 545.5                   | 1.82                  | 1.29                 | -1.29               |
| 4,603.0               | 91.00           | 185.00      | 3,080.6               | -1,627.1     | -27.2        | 554.3                   | 0.70                  | 0.31                 | 0.63                |
| 4,635.0               | 89.40           | 185.00      | 3,080.5               | -1,659.0     | -30.0        | 563.1                   | 5.00                  | -5.00                | 0.00                |
| 4,666.0               | 89.60           | 184.90      | 3,080.8               | -1,689.9     | -32.7        | 571.6                   | 0.72                  | 0.65                 | -0.32               |
| 4,698.0               | 89.70           | 184.60      | 3,080.9               | -1,721.8     | -35.3        | 580.4                   | 0.99                  | 0.31                 | -0.94               |
| 4,730.0               | 89.50           | 184.30      | 3,081.2               | -1,753.7     | -37.8        | 589.5                   | 1.13                  | -0.63                | -0.94               |
| 4,760.0               | 89.40           | 184.00      | 3,081.5               | -1,783.6     | -40.0        | 598.1                   | 1.05                  | -0.33                | -1.00               |
| 4,792.0               | 89.30           | 183.80      | 3,081.8               | -1,815.5     | -42.2        | 607.5                   | 0.70                  | -0.31                | -0.63               |
| 4,823.0               | 89.50           | 183.60      | 3,082.1               | -1,846.4     | -44.2        | 616.6                   | 0.91                  | 0.65                 | -0.65               |
| 4,855.0               | 89.80           | 183.60      | 3,082.3               | -1,878.4     | -46.2        | 626.1                   | 0.94                  | 0.94                 | 0.00                |
| 4,886.0               | 90.00           | 183.40      | 3,082.4               | -1,909.3     | -48.1        | 635.4                   | 0.91                  | 0.65                 | -0.65               |
| 4,917.0               | 89.90           | 183.00      | 3,082.4               | -1,940.3     | -49.8        | 644.8                   | 1.33                  | -0.32                | -1.29               |
| 4,949.0               | 89.50           | 182.90      | 3,082.6               | -1,972.2     | -51.5        | 654.6                   | 1.29                  | -1.25                | -0.31               |
| 4,981.0               | 88.90           | 182.60      | 3,083.0               | -2,004.2     | -53.0        | 664.6                   | 2.10                  | -1.88                | -0.94               |
| 5,013.0               | 89.40           | 182.30      | 3,083.5               | -2,036.2     | -54.4        | 674.7                   | 1.82                  | 1.56                 | -0.94               |
| 5,045.0               | 90.40           | 181.50      | 3,083.6               | -2,068.1     | -55.4        | 685.1                   | 4.00                  | 3.13                 | -2.50               |
| 5,076.0               | 90.70           | 181.40      | 3,083.3               | -2,099.1     | -56.2        | 695.4                   | 1.02                  | 0.97                 | -0.32               |
| 5,108.0               | 90.90           | 181.10      | 3,082.8               | -2,131.1     | -56.9        | 706.2                   | 1.13                  | 0.63                 | -0.94               |
| 5,140.0               | 91.10           | 180.80      | 3,082.3               | -2,163.1     | -57.4        | 717.1                   | 1.13                  | 0.63                 | -0.94               |
| 5,172.0               | 91.40           | 180.30      | 3,081.6               | -2,195.1     | -57.7        | 728.2                   | 1.82                  | 0.94                 | -1.56               |
| 5,202.0               | 91.50           | 180.10      | 3,080.8               | -2,225.1     | -57.8        | 738.8                   | 0.75                  | 0.33                 | -0.67               |
| 5,228.0               | 91.80           | 179.80      | 3,080.1               | -2,251.1     | -57.8        | 748.0                   | 1.63                  | 1.15                 | -1.15               |

Last Survey - Marquardt Fed #9 PHBL - Marquardt #9 BHL - Drilling Corridor Marquardt #9

## Survey Annotations

| Measured Depth (usft) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Comment          |
|-----------------------|-----------------------|--------------|--------------|------------------|
| 2,811.9               | 2,808.7               | -36.2        | 94.8         | Tie - On to Gyro |
| 2,893.0               | 2,889.8               | -38.4        | 96.2         | First MWD Survey |
| 5,228.0               | 3,080.1               | -2,251.1     | -57.8        | Last Survey      |

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

rec'd 2-22-2010

Operator Cimarex Energy Co. of Colorado  
Well/Lease Marquardt Federal No. 9  
County Eddy, NM

State of New Mexico  
Deviation Report

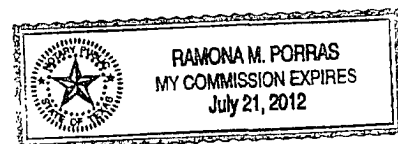
|      |     |
|------|-----|
| 255  | 2.0 |
| 403  | 2.0 |
| 655  | 1.0 |
| 941  | 1.0 |
| 1290 | 2.0 |
| 1575 | 4.5 |
| 1773 | 5.5 |
| 1837 | 3.5 |
| 1955 | 1.0 |
| 2527 | 1.0 |
| 3027 | 1.0 |
| 3469 | 1.0 |

State of:  
County Of:

The foregoing instrument was acknowledged before me on 1-29-10, by  
Person [Signature] on behalf of Key Energy Services.

Ramona M. Porras

Notary Public for: Texas  
My Commission expires: July 21, 2012



MR