

# **COG Operating L L C**

**Lea County, NM (NAD27 NME)**

**Sec. 35, T 24 S. , R 32 E**

**Eider Federal 103H**

**Wellbore #1**

**Design: Wellbore #1**

## **Survey Report - Geographic**

**06 September, 2018**

**HOBBS OCD**  
**MAR 27 2019**  
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# Survey Report - Geographic

|                  |                            |                                     |                                         |
|------------------|----------------------------|-------------------------------------|-----------------------------------------|
| <b>Company:</b>  | COG Operating L L C        | <b>Local Co-ordinate Reference:</b> | Well Eider Federal 103H                 |
| <b>Project:</b>  | Lea County, NM (NAD27 NME) | <b>TVD Reference:</b>               | KB=26' @ 3551.39usft (Scandril Freedom) |
| <b>Site:</b>     | Sec. 35, T 24 S., R 32 E   | <b>MD Reference:</b>                | KB=26' @ 3551.39usft (Scandril Freedom) |
| <b>Well:</b>     | Eider Federal 103H         | <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                              |

|                    |                                      |                      |                |
|--------------------|--------------------------------------|----------------------|----------------|
| <b>Project</b>     | Lea County, NM (NAD27 NME)           |                      |                |
| <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                 |                      |                |

|                              |                          |                          |                 |
|------------------------------|--------------------------|--------------------------|-----------------|
| <b>Site</b>                  | Sec. 35, T 24 S., R 32 E |                          |                 |
| <b>Site Position:</b>        |                          | <b>Northing:</b>         | 425,243.29 usft |
| <b>From:</b>                 | Map                      | <b>Easting:</b>          | 711,320.50 usft |
| <b>Position Uncertainty:</b> | 5.00 usft                | <b>Slot Radius:</b>      | 13-3/16 "       |
|                              |                          | <b>Latitude:</b>         | 32.16727        |
|                              |                          | <b>Longitude:</b>        | -103.65041      |
|                              |                          | <b>Grid Convergence:</b> | 0.36 °          |

|                             |                            |                            |                                  |
|-----------------------------|----------------------------|----------------------------|----------------------------------|
| <b>Well</b>                 | Eider Federal 103H, ACTIVE |                            |                                  |
| <b>Well Position</b>        | <b>+N/S</b>                | 0.00 usft                  | <b>Northing:</b> 425,283.40 usft |
|                             | <b>+E-W</b>                | 0.00 usft                  | <b>Easting:</b> 712,360.30 usft  |
| <b>Position Uncertainty</b> | 0.00 usft                  | <b>Wellhead Elevation:</b> | 0.00 usft                        |
|                             |                            | <b>Latitude:</b>           | 32.16736                         |
|                             |                            | <b>Longitude:</b>          | -103.64705                       |
|                             |                            | <b>Ground Level:</b>       | 3,525.39 usft                    |

|                  |                   |                    |                       |
|------------------|-------------------|--------------------|-----------------------|
| <b>Wellbore</b>  | Wellbore #1       |                    |                       |
| <b>Magnetics</b> | <b>Model Name</b> | <b>Sample Date</b> | <b>Declination</b>    |
|                  | HDGM              | 8/16/2018          | 6.77                  |
|                  |                   |                    | <b>Dip Angle</b>      |
|                  |                   |                    | 59.85                 |
|                  |                   |                    | <b>Field Strength</b> |
|                  |                   |                    | 47,928                |

|                          |                         |                      |                  |
|--------------------------|-------------------------|----------------------|------------------|
| <b>Design</b>            | Wellbore #1             |                      |                  |
| <b>Audit Notes:</b>      |                         |                      |                  |
| <b>Version:</b>          | 1.0                     | <b>Phase:</b>        | ACTUAL           |
|                          |                         | <b>Tie On Depth:</b> | 0.00             |
| <b>Vertical Section:</b> | <b>Depth From (TVD)</b> | <b>+N/S</b>          | <b>+E-W</b>      |
|                          | (usft)                  | (usft)               | (usft)           |
|                          | 0.00                    | 0.00                 | 0.00             |
|                          |                         |                      | <b>Direction</b> |
|                          |                         |                      | (°)              |
|                          |                         |                      | 356.96           |

|                       |                      |                                   |                                    |
|-----------------------|----------------------|-----------------------------------|------------------------------------|
| <b>Survey Program</b> | <b>Date</b> 9/6/2018 |                                   |                                    |
| <b>From</b>           | <b>To</b>            | <b>Survey (Wellbore)</b>          | <b>Tool Name</b>                   |
| (usft)                | (usft)               |                                   |                                    |
| 100.00                | 8,556.98             | Gyro Keeper Surveys (Wellbore #1) | Keeper                             |
| 8,586.00              | 16,560.00            | MWD Surveys (Wellbore #1)         | MWD                                |
|                       |                      |                                   | <b>Description</b>                 |
|                       |                      |                                   | Standard Wireline Keeper ver 1.0.2 |
|                       |                      |                                   | MWD - Standard                     |

|                 |                    |                |                 |             |             |                 |                |                 |                  |
|-----------------|--------------------|----------------|-----------------|-------------|-------------|-----------------|----------------|-----------------|------------------|
| <b>Survey</b>   |                    |                |                 |             |             |                 |                |                 |                  |
| <b>Measured</b> | <b>Inclination</b> | <b>Azimuth</b> | <b>Vertical</b> | <b>+N/S</b> | <b>+E-W</b> | <b>Map</b>      | <b>Map</b>     | <b>Latitude</b> | <b>Longitude</b> |
| <b>Depth</b>    | (°)                | (°)            | <b>Depth</b>    | (usft)      | (usft)      | <b>Northing</b> | <b>Easting</b> |                 |                  |
| (usft)          |                    |                | (usft)          |             |             | (usft)          | (usft)         |                 |                  |
| 0.00            | 0.00               | 0.00           | 0.00            | 0.00        | 0.00        | 425,283.40      | 712,360.30     | 32.16736        | -103.64705       |
| 100.00          | 0.51               | 303.77         | 100.00          | 0.25        | -0.37       | 425,283.65      | 712,359.93     | 32.16736        | -103.64705       |
| 125.00          | 0.70               | 310.93         | 125.00          | 0.41        | -0.58       | 425,283.81      | 712,359.72     | 32.16736        | -103.64705       |
| 150.00          | 0.61               | 304.98         | 150.00          | 0.59        | -0.80       | 425,283.99      | 712,359.49     | 32.16736        | -103.64705       |
| 175.00          | 0.55               | 304.45         | 174.99          | 0.73        | -1.01       | 425,284.13      | 712,359.29     | 32.16736        | -103.64705       |
| 200.00          | 0.55               | 307.55         | 199.99          | 0.87        | -1.20       | 425,284.27      | 712,359.09     | 32.16736        | -103.64705       |
| 225.00          | 0.43               | 304.42         | 224.99          | 1.00        | -1.38       | 425,284.40      | 712,358.92     | 32.16736        | -103.64705       |
| 250.00          | 0.39               | 304.36         | 249.99          | 1.10        | -1.52       | 425,284.50      | 712,358.77     | 32.16736        | -103.64705       |
| 275.00          | 0.45               | 308.62         | 274.99          | 1.21        | -1.67       | 425,284.61      | 712,358.62     | 32.16736        | -103.64705       |
| 300.00          | 0.30               | 290.72         | 299.99          | 1.29        | -1.81       | 425,284.69      | 712,358.49     | 32.16736        | -103.64705       |
| 325.00          | 0.20               | 275.83         | 324.99          | 1.32        | -1.91       | 425,284.72      | 712,358.38     | 32.16736        | -103.64705       |

# Survey Report - Geographic

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| <b>Project:</b>  | Lea County, NM (NAD27 NME) | <b>TVD Reference:</b>               | KB=26' @ 3551.39usft (Scandrill Freedom) |
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| <b>Well:</b>     | Eider Federal 103H         | <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                               |

| Survey                |                 |             |                       |              |              |                     |                    |          |            |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|----------|------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude  |
| 350.00                | 0.21            | 226.89      | 349.99                | 1.29         | -1.99        | 425,284.69          | 712,358.31         | 32.16736 | -103.64706 |
| 375.00                | 0.23            | 244.79      | 374.99                | 1.24         | -2.07        | 425,284.64          | 712,358.23         | 32.16736 | -103.64706 |
| 400.00                | 0.19            | 240.66      | 399.99                | 1.20         | -2.15        | 425,284.60          | 712,358.14         | 32.16736 | -103.64706 |
| 425.00                | 0.20            | 229.06      | 424.99                | 1.15         | -2.22        | 425,284.55          | 712,358.08         | 32.16736 | -103.64706 |
| 450.00                | 0.19            | 250.12      | 449.99                | 1.11         | -2.29        | 425,284.51          | 712,358.00         | 32.16736 | -103.64706 |
| 475.00                | 0.17            | 245.52      | 474.99                | 1.08         | -2.36        | 425,284.48          | 712,357.93         | 32.16736 | -103.64706 |
| 500.00                | 0.15            | 212.77      | 499.99                | 1.03         | -2.42        | 425,284.43          | 712,357.88         | 32.16736 | -103.64706 |
| 525.00                | 0.18            | 218.07      | 524.99                | 0.98         | -2.46        | 425,284.38          | 712,357.84         | 32.16736 | -103.64706 |
| 550.00                | 0.16            | 251.65      | 549.99                | 0.93         | -2.52        | 425,284.33          | 712,357.78         | 32.16736 | -103.64706 |
| 575.00                | 0.19            | 271.57      | 574.99                | 0.92         | -2.59        | 425,284.32          | 712,357.71         | 32.16736 | -103.64706 |
| 600.00                | 0.17            | 252.91      | 599.99                | 0.91         | -2.67        | 425,284.31          | 712,357.63         | 32.16736 | -103.64706 |
| 625.00                | 0.22            | 230.55      | 624.99                | 0.87         | -2.74        | 425,284.27          | 712,357.56         | 32.16736 | -103.64706 |
| 650.00                | 0.20            | 250.20      | 649.99                | 0.83         | -2.82        | 425,284.23          | 712,357.48         | 32.16736 | -103.64706 |
| 675.00                | 0.21            | 229.91      | 674.99                | 0.78         | -2.89        | 425,284.18          | 712,357.40         | 32.16736 | -103.64706 |
| 700.00                | 0.22            | 244.69      | 699.99                | 0.73         | -2.97        | 425,284.13          | 712,357.32         | 32.16736 | -103.64706 |
| 725.00                | 0.23            | 257.29      | 724.99                | 0.70         | -3.06        | 425,284.10          | 712,357.23         | 32.16736 | -103.64706 |
| 750.00                | 0.20            | 226.28      | 749.99                | 0.66         | -3.15        | 425,284.06          | 712,357.15         | 32.16736 | -103.64706 |
| 775.00                | 0.25            | 220.73      | 774.99                | 0.59         | -3.21        | 425,283.99          | 712,357.08         | 32.16736 | -103.64706 |
| 800.00                | 0.21            | 234.50      | 799.99                | 0.52         | -3.29        | 425,283.92          | 712,357.01         | 32.16736 | -103.64706 |
| 825.00                | 0.23            | 203.70      | 824.99                | 0.45         | -3.34        | 425,283.85          | 712,356.95         | 32.16736 | -103.64706 |
| 850.00                | 0.15            | 208.25      | 849.99                | 0.37         | -3.38        | 425,283.77          | 712,356.92         | 32.16736 | -103.64706 |
| 875.00                | 0.21            | 183.74      | 874.99                | 0.30         | -3.40        | 425,283.70          | 712,356.90         | 32.16736 | -103.64706 |
| 900.00                | 0.17            | 184.19      | 899.99                | 0.22         | -3.40        | 425,283.62          | 712,356.89         | 32.16736 | -103.64706 |
| 925.00                | 0.21            | 149.43      | 924.98                | 0.14         | -3.38        | 425,283.54          | 712,356.91         | 32.16736 | -103.64706 |
| 950.00                | 0.21            | 111.69      | 949.98                | 0.08         | -3.32        | 425,283.48          | 712,356.98         | 32.16736 | -103.64706 |
| 975.00                | 0.19            | 111.45      | 974.98                | 0.05         | -3.23        | 425,283.45          | 712,357.06         | 32.16736 | -103.64706 |
| 1,000.00              | 0.18            | 84.76       | 999.98                | 0.04         | -3.16        | 425,283.44          | 712,357.14         | 32.16736 | -103.64706 |
| 1,025.00              | 0.15            | 108.44      | 1,024.98              | 0.03         | -3.09        | 425,283.43          | 712,357.21         | 32.16736 | -103.64706 |
| 1,050.00              | 0.18            | 102.45      | 1,049.98              | 0.01         | -3.02        | 425,283.41          | 712,357.28         | 32.16736 | -103.64706 |
| 1,075.00              | 0.13            | 87.07       | 1,074.98              | 0.01         | -2.95        | 425,283.41          | 712,357.35         | 32.16736 | -103.64706 |
| 1,100.00              | 0.15            | 103.15      | 1,099.98              | 0.00         | -2.89        | 425,283.40          | 712,357.41         | 32.16736 | -103.64706 |
| 1,125.00              | 0.15            | 110.22      | 1,124.98              | -0.02        | -2.83        | 425,283.38          | 712,357.47         | 32.16736 | -103.64706 |
| 1,150.00              | 0.22            | 106.31      | 1,149.98              | -0.04        | -2.75        | 425,283.36          | 712,357.54         | 32.16736 | -103.64706 |
| 1,175.00              | 0.17            | 107.98      | 1,174.98              | -0.07        | -2.67        | 425,283.33          | 712,357.63         | 32.16736 | -103.64706 |
| 1,200.00              | 0.30            | 122.03      | 1,199.98              | -0.11        | -2.58        | 425,283.29          | 712,357.72         | 32.16736 | -103.64706 |
| 1,225.00              | 0.21            | 100.39      | 1,224.98              | -0.16        | -2.48        | 425,283.24          | 712,357.82         | 32.16736 | -103.64706 |
| 1,250.00              | 0.15            | 108.92      | 1,249.98              | -0.18        | -2.40        | 425,283.22          | 712,357.89         | 32.16736 | -103.64706 |
| 1,275.00              | 0.36            | 324.57      | 1,274.98              | -0.12        | -2.42        | 425,283.28          | 712,357.88         | 32.16736 | -103.64706 |
| 1,300.00              | 0.72            | 314.03      | 1,299.98              | 0.05         | -2.58        | 425,283.45          | 712,357.72         | 32.16736 | -103.64706 |
| 1,325.00              | 1.00            | 310.44      | 1,324.98              | 0.30         | -2.85        | 425,283.70          | 712,357.44         | 32.16736 | -103.64706 |
| 1,350.00              | 1.07            | 311.41      | 1,349.97              | 0.60         | -3.20        | 425,284.00          | 712,357.10         | 32.16736 | -103.64706 |
| 1,375.00              | 1.12            | 309.03      | 1,374.97              | 0.91         | -3.56        | 425,284.31          | 712,356.74         | 32.16736 | -103.64706 |
| 1,400.00              | 1.23            | 310.80      | 1,399.96              | 1.24         | -3.95        | 425,284.63          | 712,356.34         | 32.16736 | -103.64706 |
| 1,425.00              | 1.18            | 310.69      | 1,424.96              | 1.58         | -4.35        | 425,284.98          | 712,355.94         | 32.16736 | -103.64706 |
| 1,450.00              | 1.33            | 310.75      | 1,449.95              | 1.94         | -4.77        | 425,285.34          | 712,355.53         | 32.16737 | -103.64706 |
| 1,475.00              | 1.30            | 308.48      | 1,474.95              | 2.30         | -5.21        | 425,285.70          | 712,355.09         | 32.16737 | -103.64707 |
| 1,500.00              | 1.32            | 308.41      | 1,499.94              | 2.66         | -5.66        | 425,286.06          | 712,354.64         | 32.16737 | -103.64707 |
| 1,525.00              | 1.30            | 306.27      | 1,524.93              | 3.00         | -6.11        | 425,286.40          | 712,354.19         | 32.16737 | -103.64707 |
| 1,550.00              | 1.33            | 306.46      | 1,549.93              | 3.34         | -6.57        | 425,286.74          | 712,353.72         | 32.16737 | -103.64707 |
| 1,575.00              | 1.42            | 308.36      | 1,574.92              | 3.71         | -7.05        | 425,287.11          | 712,353.25         | 32.16737 | -103.64707 |
| 1,600.00              | 1.31            | 306.61      | 1,599.91              | 4.07         | -7.52        | 425,287.47          | 712,352.77         | 32.16737 | -103.64707 |
| 1,625.00              | 1.33            | 306.77      | 1,624.90              | 4.42         | -7.98        | 425,287.81          | 712,352.31         | 32.16737 | -103.64707 |
| 1,650.00              | 1.31            | 305.79      | 1,649.90              | 4.76         | -8.45        | 425,288.16          | 712,351.85         | 32.16737 | -103.64708 |
| 1,675.00              | 1.35            | 307.07      | 1,674.89              | 5.10         | -8.91        | 425,288.50          | 712,351.38         | 32.16737 | -103.64708 |
| 1,700.00              | 1.35            | 305.35      | 1,699.88              | 5.45         | -9.39        | 425,288.85          | 712,350.91         | 32.16738 | -103.64708 |

# Survey Report - Geographic

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|------------------|----------------------------|-------------------------------------|------------------------------------------|
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| <b>Project:</b>  | Lea County, NM (NAD27 NME) | <b>TVD Reference:</b>               | KB=26' @ 3551.39usft (Scandrill Freedom) |
| <b>Site:</b>     | Sec. 35, T 24 S, R 32 E    | <b>MD Reference:</b>                | KB=26' @ 3551.39usft (Scandrill Freedom) |
| <b>Well:</b>     | Eider Federal 103H         | <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                               |

| Survey                      |                    |                |                             |                 |                 |                           |                          |          |            |
|-----------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|---------------------------|--------------------------|----------|------------|
| Measured<br>Depth<br>(usft) | Inclination<br>(°) | Azimuth<br>(°) | Vertical<br>Depth<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Map<br>Northing<br>(usft) | Map<br>Easting<br>(usft) | Latitude | Longitude  |
| 1,725.00                    | 1.32               | 306.36         | 1,724.88                    | 5.79            | -9.86           | 425,289.19                | 712,350.43               | 32.16738 | -103.64708 |
| 1,750.00                    | 1.28               | 304.75         | 1,749.87                    | 6.12            | -10.32          | 425,289.52                | 712,349.97               | 32.16738 | -103.64708 |
| 1,775.00                    | 1.34               | 306.00         | 1,774.86                    | 6.45            | -10.79          | 425,289.85                | 712,349.51               | 32.16738 | -103.64708 |
| 1,800.00                    | 1.32               | 308.02         | 1,799.86                    | 6.80            | -11.25          | 425,290.20                | 712,349.04               | 32.16738 | -103.64708 |
| 1,825.00                    | 1.39               | 307.14         | 1,824.85                    | 7.16            | -11.72          | 425,290.56                | 712,348.58               | 32.16738 | -103.64709 |
| 1,850.00                    | 1.26               | 305.82         | 1,849.84                    | 7.50            | -12.18          | 425,290.90                | 712,348.11               | 32.16738 | -103.64709 |
| 1,875.00                    | 1.27               | 307.50         | 1,874.84                    | 7.83            | -12.63          | 425,291.23                | 712,347.67               | 32.16738 | -103.64709 |
| 1,900.00                    | 1.23               | 306.20         | 1,899.83                    | 8.16            | -13.06          | 425,291.56                | 712,347.23               | 32.16738 | -103.64709 |
| 1,925.00                    | 1.22               | 306.45         | 1,924.83                    | 8.48            | -13.49          | 425,291.88                | 712,346.80               | 32.16738 | -103.64709 |
| 1,950.00                    | 1.17               | 305.58         | 1,949.82                    | 8.78            | -13.92          | 425,292.18                | 712,346.38               | 32.16738 | -103.64709 |
| 1,975.00                    | 1.16               | 307.59         | 1,974.82                    | 9.09            | -14.32          | 425,292.49                | 712,345.97               | 32.16739 | -103.64709 |
| 2,000.00                    | 1.29               | 307.27         | 1,999.81                    | 9.41            | -14.75          | 425,292.81                | 712,345.55               | 32.16739 | -103.64710 |
| 2,025.00                    | 1.25               | 306.40         | 2,024.80                    | 9.74            | -15.19          | 425,293.14                | 712,345.10               | 32.16739 | -103.64710 |
| 2,050.00                    | 1.26               | 305.66         | 2,049.80                    | 10.07           | -15.63          | 425,293.47                | 712,344.66               | 32.16739 | -103.64710 |
| 2,075.00                    | 1.34               | 307.25         | 2,074.79                    | 10.40           | -16.09          | 425,293.80                | 712,344.20               | 32.16739 | -103.64710 |
| 2,100.00                    | 1.29               | 308.34         | 2,099.78                    | 10.75           | -16.54          | 425,294.15                | 712,343.75               | 32.16739 | -103.64710 |
| 2,125.00                    | 1.31               | 308.43         | 2,124.78                    | 11.11           | -16.99          | 425,294.51                | 712,343.31               | 32.16739 | -103.64710 |
| 2,150.00                    | 1.24               | 307.44         | 2,149.77                    | 11.45           | -17.43          | 425,294.85                | 712,342.87               | 32.16739 | -103.64710 |
| 2,175.00                    | 1.28               | 307.24         | 2,174.77                    | 11.78           | -17.86          | 425,295.18                | 712,342.43               | 32.16739 | -103.64711 |
| 2,200.00                    | 1.37               | 307.38         | 2,199.76                    | 12.13           | -18.32          | 425,295.53                | 712,341.97               | 32.16739 | -103.64711 |
| 2,225.00                    | 1.31               | 305.13         | 2,224.75                    | 12.48           | -18.80          | 425,295.88                | 712,341.50               | 32.16740 | -103.64711 |
| 2,250.00                    | 1.33               | 305.61         | 2,249.75                    | 12.81           | -19.27          | 425,296.21                | 712,341.03               | 32.16740 | -103.64711 |
| 2,275.00                    | 1.29               | 302.81         | 2,274.74                    | 13.13           | -19.74          | 425,296.53                | 712,340.56               | 32.16740 | -103.64711 |
| 2,300.00                    | 1.31               | 303.08         | 2,299.73                    | 13.44           | -20.21          | 425,296.84                | 712,340.08               | 32.16740 | -103.64711 |
| 2,325.00                    | 1.39               | 303.82         | 2,324.73                    | 13.77           | -20.71          | 425,297.17                | 712,339.59               | 32.16740 | -103.64712 |
| 2,350.00                    | 1.37               | 303.83         | 2,349.72                    | 14.10           | -21.21          | 425,297.50                | 712,339.09               | 32.16740 | -103.64712 |
| 2,375.00                    | 1.28               | 299.47         | 2,374.71                    | 14.41           | -21.70          | 425,297.81                | 712,338.60               | 32.16740 | -103.64712 |
| 2,400.00                    | 1.29               | 296.98         | 2,399.70                    | 14.67           | -22.19          | 425,298.07                | 712,338.11               | 32.16740 | -103.64712 |
| 2,425.00                    | 1.28               | 294.26         | 2,424.70                    | 14.91           | -22.70          | 425,298.31                | 712,337.60               | 32.16740 | -103.64712 |
| 2,450.00                    | 1.32               | 295.18         | 2,449.69                    | 15.15           | -23.21          | 425,298.55                | 712,337.08               | 32.16740 | -103.64712 |
| 2,475.00                    | 1.23               | 297.34         | 2,474.69                    | 15.40           | -23.71          | 425,298.80                | 712,336.59               | 32.16740 | -103.64712 |
| 2,500.00                    | 1.24               | 292.03         | 2,499.68                    | 15.62           | -24.20          | 425,299.02                | 712,336.10               | 32.16740 | -103.64713 |
| 2,525.00                    | 1.24               | 291.19         | 2,524.67                    | 15.82           | -24.70          | 425,299.22                | 712,335.59               | 32.16740 | -103.64713 |
| 2,549.99                    | 1.26               | 292.60         | 2,549.67                    | 16.02           | -25.21          | 425,299.42                | 712,335.09               | 32.16740 | -103.64713 |
| 2,574.99                    | 1.21               | 289.99         | 2,574.66                    | 16.22           | -25.71          | 425,299.62                | 712,334.59               | 32.16741 | -103.64713 |
| 2,599.99                    | 1.18               | 288.02         | 2,599.66                    | 16.39           | -26.20          | 425,299.79                | 712,334.09               | 32.16741 | -103.64713 |
| 2,624.99                    | 1.18               | 287.68         | 2,624.65                    | 16.55           | -26.69          | 425,299.95                | 712,333.60               | 32.16741 | -103.64713 |
| 2,649.99                    | 1.15               | 283.02         | 2,649.65                    | 16.68           | -27.18          | 425,300.08                | 712,333.11               | 32.16741 | -103.64714 |
| 2,674.99                    | 1.16               | 285.33         | 2,674.64                    | 16.81           | -27.67          | 425,300.20                | 712,332.63               | 32.16741 | -103.64714 |
| 2,699.99                    | 1.25               | 285.16         | 2,699.64                    | 16.94           | -28.18          | 425,300.34                | 712,332.12               | 32.16741 | -103.64714 |
| 2,724.99                    | 1.25               | 281.87         | 2,724.63                    | 17.07           | -28.71          | 425,300.47                | 712,331.59               | 32.16741 | -103.64714 |
| 2,749.99                    | 1.22               | 280.49         | 2,749.62                    | 17.18           | -29.24          | 425,300.57                | 712,331.06               | 32.16741 | -103.64714 |
| 2,774.99                    | 1.23               | 278.49         | 2,774.62                    | 17.26           | -29.76          | 425,300.66                | 712,330.53               | 32.16741 | -103.64714 |
| 2,799.99                    | 1.26               | 279.98         | 2,799.61                    | 17.35           | -30.30          | 425,300.75                | 712,330.00               | 32.16741 | -103.64715 |
| 2,824.99                    | 1.27               | 276.51         | 2,824.61                    | 17.43           | -30.85          | 425,300.83                | 712,329.45               | 32.16741 | -103.64715 |
| 2,849.99                    | 1.31               | 278.01         | 2,849.60                    | 17.50           | -31.40          | 425,300.90                | 712,328.89               | 32.16741 | -103.64715 |
| 2,874.99                    | 1.27               | 274.53         | 2,874.59                    | 17.56           | -31.96          | 425,300.96                | 712,328.33               | 32.16741 | -103.64715 |
| 2,899.99                    | 1.27               | 274.05         | 2,899.59                    | 17.60           | -32.52          | 425,301.00                | 712,327.78               | 32.16741 | -103.64715 |
| 2,924.99                    | 1.30               | 270.58         | 2,924.58                    | 17.63           | -33.08          | 425,301.03                | 712,327.22               | 32.16741 | -103.64716 |
| 2,949.99                    | 1.27               | 267.85         | 2,949.57                    | 17.62           | -33.64          | 425,301.02                | 712,326.66               | 32.16741 | -103.64716 |
| 2,974.99                    | 1.35               | 266.14         | 2,974.57                    | 17.59           | -34.21          | 425,300.99                | 712,326.09               | 32.16741 | -103.64716 |
| 2,999.99                    | 1.35               | 263.72         | 2,999.56                    | 17.54           | -34.79          | 425,300.94                | 712,325.50               | 32.16741 | -103.64716 |
| 3,024.99                    | 1.34               | 260.62         | 3,024.55                    | 17.46           | -35.37          | 425,300.86                | 712,324.92               | 32.16741 | -103.64716 |
| 3,049.99                    | 1.35               | 256.25         | 3,049.55                    | 17.34           | -35.95          | 425,300.74                | 712,324.35               | 32.16741 | -103.64716 |
| 3,074.99                    | 1.33               | 255.92         | 3,074.54                    | 17.20           | -36.52          | 425,300.60                | 712,323.78               | 32.16741 | -103.64717 |

# Survey Report - Geographic

|                  |                            |                                     |                                         |
|------------------|----------------------------|-------------------------------------|-----------------------------------------|
| <b>Company:</b>  | COG Operating L L C        | <b>Local Co-ordinate Reference:</b> | Well Eider Federal 103H                 |
| <b>Project:</b>  | Lea County, NM (NAD27 NME) | <b>TVD Reference:</b>               | KB=26' @ 3551.39usft (Scandril Freedom) |
| <b>Site:</b>     | Sec. 35, T 24 S, R 32 E    | <b>MD Reference:</b>                | KB=26' @ 3551.39usft (Scandril Freedom) |
| <b>Well:</b>     | Eider Federal 103H         | <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                              |

| Survey                |                 |             |                       |              |              |                     |                    |          |            |  |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|----------|------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude  |  |
| 3,099.99              | 1.35            | 257.18      | 3,099.53              | 17.06        | -37.08       | 425,300.46          | 712,323.21         | 32.16741 | -103.64717 |  |
| 3,124.99              | 1.36            | 256.79      | 3,124.53              | 16.93        | -37.66       | 425,300.33          | 712,322.63         | 32.16741 | -103.64717 |  |
| 3,149.99              | 1.42            | 257.80      | 3,149.52              | 16.80        | -38.25       | 425,300.20          | 712,322.04         | 32.16741 | -103.64717 |  |
| 3,174.99              | 1.37            | 254.62      | 3,174.51              | 16.65        | -38.84       | 425,300.05          | 712,321.45         | 32.16741 | -103.64717 |  |
| 3,199.99              | 1.35            | 251.74      | 3,199.50              | 16.48        | -39.41       | 425,299.88          | 712,320.88         | 32.16741 | -103.64718 |  |
| 3,224.99              | 1.35            | 253.81      | 3,224.50              | 16.31        | -39.97       | 425,299.71          | 712,320.32         | 32.16741 | -103.64718 |  |
| 3,249.99              | 1.33            | 254.79      | 3,249.49              | 16.15        | -40.54       | 425,299.55          | 712,319.76         | 32.16741 | -103.64718 |  |
| 3,274.99              | 1.34            | 254.13      | 3,274.48              | 15.99        | -41.10       | 425,299.39          | 712,319.20         | 32.16741 | -103.64718 |  |
| 3,299.99              | 1.37            | 253.00      | 3,299.48              | 15.82        | -41.66       | 425,299.22          | 712,318.63         | 32.16740 | -103.64718 |  |
| 3,324.99              | 1.38            | 257.45      | 3,324.47              | 15.67        | -42.24       | 425,299.07          | 712,318.05         | 32.16740 | -103.64718 |  |
| 3,349.99              | 1.34            | 255.68      | 3,349.46              | 15.53        | -42.82       | 425,298.93          | 712,317.47         | 32.16740 | -103.64719 |  |
| 3,374.99              | 1.35            | 256.71      | 3,374.45              | 15.39        | -43.39       | 425,298.79          | 712,316.90         | 32.16740 | -103.64719 |  |
| 3,399.99              | 1.33            | 256.68      | 3,399.45              | 15.26        | -43.96       | 425,298.66          | 712,316.34         | 32.16740 | -103.64719 |  |
| 3,424.99              | 1.38            | 256.31      | 3,424.44              | 15.12        | -44.54       | 425,298.52          | 712,315.76         | 32.16740 | -103.64719 |  |
| 3,449.99              | 1.46            | 252.93      | 3,449.43              | 14.96        | -45.13       | 425,298.36          | 712,315.16         | 32.16740 | -103.64719 |  |
| 3,474.99              | 1.55            | 247.38      | 3,474.42              | 14.73        | -45.75       | 425,298.13          | 712,314.55         | 32.16740 | -103.64720 |  |
| 3,499.99              | 1.48            | 246.81      | 3,499.42              | 14.48        | -46.36       | 425,297.87          | 712,313.94         | 32.16740 | -103.64720 |  |
| 3,524.99              | 1.50            | 247.29      | 3,524.41              | 14.22        | -46.96       | 425,297.62          | 712,313.34         | 32.16740 | -103.64720 |  |
| 3,549.99              | 1.55            | 247.05      | 3,549.40              | 13.96        | -47.57       | 425,297.36          | 712,312.73         | 32.16740 | -103.64720 |  |
| 3,574.99              | 1.61            | 244.20      | 3,574.39              | 13.68        | -48.20       | 425,297.08          | 712,312.10         | 32.16740 | -103.64720 |  |
| 3,599.99              | 1.56            | 243.68      | 3,599.38              | 13.38        | -48.82       | 425,296.77          | 712,311.48         | 32.16740 | -103.64721 |  |
| 3,624.99              | 1.47            | 236.00      | 3,624.37              | 13.05        | -49.39       | 425,296.44          | 712,310.91         | 32.16740 | -103.64721 |  |
| 3,649.99              | 1.42            | 230.75      | 3,649.36              | 12.67        | -49.89       | 425,296.07          | 712,310.40         | 32.16740 | -103.64721 |  |
| 3,674.99              | 1.39            | 226.52      | 3,674.35              | 12.27        | -50.35       | 425,295.66          | 712,309.94         | 32.16739 | -103.64721 |  |
| 3,699.99              | 1.21            | 237.14      | 3,699.35              | 11.91        | -50.80       | 425,295.31          | 712,309.50         | 32.16739 | -103.64721 |  |
| 3,724.99              | 1.24            | 235.75      | 3,724.34              | 11.62        | -51.24       | 425,295.02          | 712,309.05         | 32.16739 | -103.64721 |  |
| 3,749.99              | 1.23            | 237.58      | 3,749.34              | 11.32        | -51.69       | 425,294.72          | 712,308.60         | 32.16739 | -103.64722 |  |
| 3,774.99              | 1.18            | 236.86      | 3,774.33              | 11.04        | -52.13       | 425,294.44          | 712,308.16         | 32.16739 | -103.64722 |  |
| 3,799.99              | 1.27            | 237.43      | 3,799.33              | 10.75        | -52.58       | 425,294.15          | 712,307.71         | 32.16739 | -103.64722 |  |
| 3,824.99              | 1.30            | 236.13      | 3,824.32              | 10.44        | -53.05       | 425,293.84          | 712,307.24         | 32.16739 | -103.64722 |  |
| 3,849.99              | 1.31            | 232.98      | 3,849.31              | 10.11        | -53.52       | 425,293.51          | 712,306.78         | 32.16739 | -103.64722 |  |
| 3,874.99              | 1.32            | 233.56      | 3,874.31              | 9.77         | -53.98       | 425,293.17          | 712,306.32         | 32.16739 | -103.64722 |  |
| 3,899.99              | 1.32            | 232.51      | 3,899.30              | 9.42         | -54.44       | 425,292.82          | 712,305.86         | 32.16739 | -103.64722 |  |
| 3,924.99              | 1.35            | 234.81      | 3,924.29              | 9.08         | -54.90       | 425,292.48          | 712,305.39         | 32.16739 | -103.64723 |  |
| 3,949.99              | 1.34            | 231.11      | 3,949.29              | 8.72         | -55.37       | 425,292.12          | 712,304.92         | 32.16739 | -103.64723 |  |
| 3,974.99              | 1.29            | 231.04      | 3,974.28              | 8.36         | -55.82       | 425,291.76          | 712,304.48         | 32.16738 | -103.64723 |  |
| 3,999.99              | 1.28            | 235.51      | 3,999.27              | 8.03         | -56.27       | 425,291.43          | 712,304.03         | 32.16738 | -103.64723 |  |
| 4,024.99              | 1.26            | 231.76      | 4,024.27              | 7.70         | -56.71       | 425,291.10          | 712,303.58         | 32.16738 | -103.64723 |  |
| 4,049.99              | 1.28            | 226.64      | 4,049.26              | 7.34         | -57.13       | 425,290.74          | 712,303.16         | 32.16738 | -103.64723 |  |
| 4,074.99              | 1.24            | 224.00      | 4,074.25              | 6.95         | -57.52       | 425,290.35          | 712,302.77         | 32.16738 | -103.64723 |  |
| 4,099.99              | 1.24            | 212.94      | 4,099.25              | 6.53         | -57.86       | 425,289.93          | 712,302.44         | 32.16738 | -103.64724 |  |
| 4,124.99              | 1.15            | 205.25      | 4,124.24              | 6.07         | -58.11       | 425,289.47          | 712,302.18         | 32.16738 | -103.64724 |  |
| 4,149.99              | 1.21            | 200.28      | 4,149.24              | 5.60         | -58.31       | 425,289.00          | 712,301.98         | 32.16738 | -103.64724 |  |
| 4,174.99              | 1.23            | 193.23      | 4,174.23              | 5.09         | -58.46       | 425,288.49          | 712,301.83         | 32.16738 | -103.64724 |  |
| 4,199.99              | 1.28            | 185.99      | 4,199.23              | 4.55         | -58.55       | 425,287.95          | 712,301.74         | 32.16737 | -103.64724 |  |
| 4,224.99              | 1.30            | 180.49      | 4,224.22              | 3.99         | -58.59       | 425,287.39          | 712,301.71         | 32.16737 | -103.64724 |  |
| 4,249.99              | 1.30            | 177.10      | 4,249.21              | 3.42         | -58.57       | 425,286.82          | 712,301.72         | 32.16737 | -103.64724 |  |
| 4,274.99              | 1.31            | 175.20      | 4,274.21              | 2.86         | -58.54       | 425,286.26          | 712,301.76         | 32.16737 | -103.64724 |  |
| 4,299.99              | 1.44            | 171.66      | 4,299.20              | 2.26         | -58.47       | 425,285.66          | 712,301.83         | 32.16737 | -103.64724 |  |
| 4,324.99              | 1.37            | 173.18      | 4,324.19              | 1.65         | -58.39       | 425,285.05          | 712,301.91         | 32.16737 | -103.64724 |  |
| 4,349.99              | 1.44            | 168.43      | 4,349.18              | 1.05         | -58.29       | 425,284.45          | 712,302.01         | 32.16736 | -103.64724 |  |
| 4,374.99              | 1.52            | 165.15      | 4,374.18              | 0.42         | -58.14       | 425,283.82          | 712,302.16         | 32.16736 | -103.64724 |  |
| 4,399.99              | 1.70            | 161.37      | 4,399.17              | -0.25        | -57.94       | 425,283.15          | 712,302.36         | 32.16736 | -103.64724 |  |
| 4,424.99              | 1.88            | 158.07      | 4,424.15              | -0.98        | -57.66       | 425,282.42          | 712,302.63         | 32.16736 | -103.64724 |  |
| 4,449.99              | 1.98            | 156.80      | 4,449.14              | -1.76        | -57.34       | 425,281.64          | 712,302.96         | 32.16736 | -103.64723 |  |

# Survey Report - Geographic

|                  |                            |                                     |                                          |
|------------------|----------------------------|-------------------------------------|------------------------------------------|
| <b>Company:</b>  | COG Operating L L C        | <b>Local Co-ordinate Reference:</b> | Well Eider Federal 103H                  |
| <b>Project:</b>  | Lea County, NM (NAD27 NME) | <b>TVD Reference:</b>               | KB=26' @ 3551.39usft (Scandriil Freedom) |
| <b>Site:</b>     | Sec. 35, T 24 S. , R 32 E  | <b>MD Reference:</b>                | KB=26' @ 3551.39usft (Scandriil Freedom) |
| <b>Well:</b>     | Eider Federal 103H         | <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                               |

| Survey                |                 |             |                       |              |              |                     |                    |          |            |  |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|----------|------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude  |  |
| 4,474.99              | 2.16            | 154.33      | 4,474.12              | -2.58        | -56.97       | 425,280.82          | 712,303.33         | 32.16735 | -103.64723 |  |
| 4,499.99              | 2.33            | 154.22      | 4,499.10              | -3.46        | -56.54       | 425,279.94          | 712,303.75         | 32.16735 | -103.64723 |  |
| 4,524.99              | 2.51            | 153.71      | 4,524.08              | -4.41        | -56.08       | 425,278.99          | 712,304.22         | 32.16735 | -103.64723 |  |
| 4,549.99              | 2.90            | 152.43      | 4,549.05              | -5.46        | -55.54       | 425,277.94          | 712,304.75         | 32.16735 | -103.64723 |  |
| 4,574.99              | 2.94            | 151.12      | 4,574.02              | -6.59        | -54.94       | 425,276.81          | 712,305.36         | 32.16734 | -103.64723 |  |
| 4,599.99              | 2.87            | 151.69      | 4,598.99              | -7.70        | -54.33       | 425,275.70          | 712,305.96         | 32.16734 | -103.64722 |  |
| 4,624.99              | 2.88            | 149.27      | 4,623.96              | -8.79        | -53.72       | 425,274.61          | 712,306.58         | 32.16734 | -103.64722 |  |
| 4,649.99              | 2.99            | 148.32      | 4,648.92              | -9.88        | -53.05       | 425,273.52          | 712,307.24         | 32.16733 | -103.64722 |  |
| 4,674.99              | 3.15            | 146.79      | 4,673.89              | -11.01       | -52.33       | 425,272.39          | 712,307.96         | 32.16733 | -103.64722 |  |
| 4,699.99              | 3.06            | 145.85      | 4,698.85              | -12.14       | -51.58       | 425,271.26          | 712,308.71         | 32.16733 | -103.64722 |  |
| 4,724.99              | 3.02            | 144.28      | 4,723.82              | -13.23       | -50.82       | 425,270.17          | 712,309.47         | 32.16732 | -103.64721 |  |
| 4,749.99              | 3.06            | 145.85      | 4,748.78              | -14.31       | -50.07       | 425,269.09          | 712,310.23         | 32.16732 | -103.64721 |  |
| 4,774.99              | 3.04            | 146.63      | 4,773.75              | -15.42       | -49.33       | 425,267.98          | 712,310.97         | 32.16732 | -103.64721 |  |
| 4,799.99              | 2.97            | 146.51      | 4,798.71              | -16.51       | -48.60       | 425,266.89          | 712,311.69         | 32.16732 | -103.64721 |  |
| 4,824.99              | 2.87            | 143.37      | 4,823.68              | -17.56       | -47.87       | 425,265.84          | 712,312.42         | 32.16731 | -103.64720 |  |
| 4,849.99              | 2.60            | 143.34      | 4,848.65              | -18.51       | -47.16       | 425,264.89          | 712,313.13         | 32.16731 | -103.64720 |  |
| 4,874.99              | 2.55            | 144.56      | 4,873.62              | -19.42       | -46.50       | 425,263.98          | 712,313.80         | 32.16731 | -103.64720 |  |
| 4,899.99              | 2.44            | 145.56      | 4,898.60              | -20.31       | -45.88       | 425,263.09          | 712,314.42         | 32.16731 | -103.64720 |  |
| 4,924.99              | 2.21            | 150.88      | 4,923.58              | -21.17       | -45.34       | 425,262.23          | 712,314.95         | 32.16730 | -103.64720 |  |
| 4,949.99              | 1.96            | 159.14      | 4,948.56              | -21.99       | -44.95       | 425,261.41          | 712,315.34         | 32.16730 | -103.64719 |  |
| 4,974.99              | 1.74            | 174.63      | 4,973.55              | -22.77       | -44.77       | 425,260.63          | 712,315.53         | 32.16730 | -103.64719 |  |
| 4,999.99              | 1.79            | 174.57      | 4,998.54              | -23.54       | -44.69       | 425,259.86          | 712,315.60         | 32.16730 | -103.64719 |  |
| 5,024.99              | 1.68            | 179.39      | 5,023.53              | -24.29       | -44.65       | 425,259.11          | 712,315.64         | 32.16729 | -103.64719 |  |
| 5,049.99              | 1.61            | 197.35      | 5,048.52              | -24.99       | -44.75       | 425,258.40          | 712,315.54         | 32.16729 | -103.64719 |  |
| 5,074.99              | 2.06            | 223.83      | 5,073.50              | -25.65       | -45.17       | 425,257.75          | 712,315.13         | 32.16729 | -103.64720 |  |
| 5,099.99              | 2.30            | 231.12      | 5,098.49              | -26.29       | -45.87       | 425,257.11          | 712,314.42         | 32.16729 | -103.64720 |  |
| 5,124.99              | 2.53            | 233.64      | 5,123.46              | -26.94       | -46.71       | 425,256.46          | 712,313.59         | 32.16729 | -103.64720 |  |
| 5,149.99              | 3.15            | 238.75      | 5,148.43              | -27.62       | -47.74       | 425,255.78          | 712,312.56         | 32.16729 | -103.64720 |  |
| 5,174.99              | 3.76            | 241.72      | 5,173.39              | -28.36       | -49.05       | 425,255.04          | 712,311.25         | 32.16728 | -103.64721 |  |
| 5,199.99              | 3.79            | 241.36      | 5,198.33              | -29.15       | -50.49       | 425,254.25          | 712,309.80         | 32.16728 | -103.64721 |  |
| 5,224.99              | 3.76            | 241.48      | 5,223.28              | -29.94       | -51.94       | 425,253.46          | 712,308.36         | 32.16728 | -103.64722 |  |
| 5,249.99              | 3.78            | 240.92      | 5,248.23              | -30.73       | -53.38       | 425,252.67          | 712,306.92         | 32.16728 | -103.64722 |  |
| 5,274.99              | 3.91            | 240.60      | 5,273.17              | -31.55       | -54.84       | 425,251.85          | 712,305.45         | 32.16727 | -103.64723 |  |
| 5,299.99              | 3.88            | 241.05      | 5,298.11              | -32.37       | -56.33       | 425,251.03          | 712,303.97         | 32.16727 | -103.64723 |  |
| 5,324.99              | 3.82            | 241.05      | 5,323.05              | -33.19       | -57.79       | 425,250.21          | 712,302.50         | 32.16727 | -103.64724 |  |
| 5,349.99              | 3.78            | 241.30      | 5,348.00              | -33.99       | -59.25       | 425,249.41          | 712,301.05         | 32.16727 | -103.64724 |  |
| 5,374.99              | 3.87            | 241.28      | 5,372.94              | -34.79       | -60.71       | 425,248.61          | 712,299.59         | 32.16727 | -103.64725 |  |
| 5,399.99              | 4.15            | 243.03      | 5,397.88              | -35.60       | -62.26       | 425,247.80          | 712,298.04         | 32.16726 | -103.64725 |  |
| 5,424.99              | 4.42            | 245.54      | 5,422.81              | -36.41       | -63.94       | 425,246.99          | 712,296.36         | 32.16726 | -103.64726 |  |
| 5,449.99              | 4.77            | 248.51      | 5,447.73              | -37.19       | -65.78       | 425,246.21          | 712,294.51         | 32.16726 | -103.64726 |  |
| 5,474.99              | 4.95            | 250.81      | 5,472.64              | -37.93       | -67.77       | 425,245.47          | 712,292.53         | 32.16726 | -103.64727 |  |
| 5,499.99              | 4.92            | 252.17      | 5,497.55              | -38.61       | -69.81       | 425,244.79          | 712,290.49         | 32.16726 | -103.64728 |  |
| 5,524.99              | 5.14            | 251.45      | 5,522.45              | -39.29       | -71.89       | 425,244.11          | 712,288.41         | 32.16725 | -103.64728 |  |
| 5,549.99              | 5.19            | 250.82      | 5,547.35              | -40.02       | -74.02       | 425,243.38          | 712,286.28         | 32.16725 | -103.64729 |  |
| 5,574.99              | 5.23            | 251.03      | 5,572.25              | -40.76       | -76.16       | 425,242.64          | 712,284.13         | 32.16725 | -103.64730 |  |
| 5,599.99              | 5.24            | 250.78      | 5,597.14              | -41.51       | -78.32       | 425,241.89          | 712,281.98         | 32.16725 | -103.64730 |  |
| 5,624.99              | 5.21            | 250.39      | 5,622.04              | -42.27       | -80.47       | 425,241.13          | 712,279.83         | 32.16725 | -103.64731 |  |
| 5,649.99              | 5.28            | 251.37      | 5,646.94              | -43.01       | -82.63       | 425,240.39          | 712,277.67         | 32.16724 | -103.64732 |  |
| 5,674.99              | 5.30            | 251.45      | 5,671.83              | -43.75       | -84.81       | 425,239.65          | 712,275.48         | 32.16724 | -103.64732 |  |
| 5,699.99              | 5.28            | 251.86      | 5,696.72              | -44.47       | -87.00       | 425,238.92          | 712,273.30         | 32.16724 | -103.64733 |  |
| 5,724.99              | 5.27            | 252.46      | 5,721.62              | -45.18       | -89.19       | 425,238.22          | 712,271.11         | 32.16724 | -103.64734 |  |
| 5,749.99              | 5.18            | 252.06      | 5,746.51              | -45.87       | -91.36       | 425,237.53          | 712,268.94         | 32.16724 | -103.64734 |  |
| 5,774.99              | 5.21            | 252.58      | 5,771.41              | -46.56       | -93.51       | 425,236.84          | 712,266.78         | 32.16723 | -103.64735 |  |
| 5,799.99              | 5.26            | 252.28      | 5,796.31              | -47.25       | -95.69       | 425,236.15          | 712,264.61         | 32.16723 | -103.64736 |  |
| 5,824.99              | 5.27            | 252.73      | 5,821.20              | -47.94       | -97.87       | 425,235.46          | 712,262.42         | 32.16723 | -103.64737 |  |

# Survey Report - Geographic

|                  |                            |                                     |                                          |
|------------------|----------------------------|-------------------------------------|------------------------------------------|
| <b>Company:</b>  | COG Operating L L C        | <b>Local Co-ordinate Reference:</b> | Well Eider Federal 103H                  |
| <b>Project:</b>  | Lea County, NM (NAD27 NME) | <b>TVD Reference:</b>               | KB=26' @ 3551.39usft (Scandrill Freedom) |
| <b>Site:</b>     | Sec. 35, T 24 S., R 32 E   | <b>MD Reference:</b>                | KB=26' @ 3551.39usft (Scandrill Freedom) |
| <b>Well:</b>     | Elder Federal 103H         | <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                               |

| Survey                |                 |             |                       |              |              |                     |                    |          |            |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|----------|------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude  |
| 5,849.99              | 5.31            | 252.03      | 5,846.09              | -48.64       | -100.07      | 425,234.76          | 712,260.22         | 32.16723 | -103.64737 |
| 5,874.99              | 5.20            | 252.47      | 5,870.99              | -49.33       | -102.25      | 425,234.07          | 712,258.04         | 32.16723 | -103.64738 |
| 5,899.99              | 5.13            | 253.08      | 5,895.89              | -50.00       | -104.40      | 425,233.40          | 712,255.89         | 32.16722 | -103.64739 |
| 5,924.99              | 5.37            | 252.85      | 5,920.78              | -50.67       | -106.59      | 425,232.73          | 712,253.71         | 32.16722 | -103.64739 |
| 5,949.99              | 5.37            | 252.52      | 5,945.67              | -51.37       | -108.82      | 425,232.03          | 712,251.47         | 32.16722 | -103.64740 |
| 5,974.99              | 5.26            | 252.42      | 5,970.56              | -52.06       | -111.03      | 425,231.34          | 712,249.27         | 32.16722 | -103.64741 |
| 5,999.99              | 5.14            | 253.13      | 5,995.46              | -52.74       | -113.19      | 425,230.66          | 712,247.10         | 32.16722 | -103.64742 |
| 6,024.99              | 5.28            | 253.89      | 6,020.36              | -53.38       | -115.37      | 425,230.02          | 712,244.92         | 32.16722 | -103.64742 |
| 6,049.99              | 5.17            | 253.98      | 6,045.25              | -54.01       | -117.56      | 425,229.39          | 712,242.74         | 32.16721 | -103.64743 |
| 6,074.99              | 5.27            | 253.86      | 6,070.15              | -54.64       | -119.74      | 425,228.76          | 712,240.55         | 32.16721 | -103.64744 |
| 6,099.99              | 5.20            | 253.51      | 6,095.05              | -55.28       | -121.93      | 425,228.12          | 712,238.36         | 32.16721 | -103.64744 |
| 6,124.99              | 5.19            | 254.12      | 6,119.94              | -55.91       | -124.11      | 425,227.49          | 712,236.19         | 32.16721 | -103.64745 |
| 6,149.99              | 5.18            | 253.69      | 6,144.84              | -56.54       | -126.28      | 425,226.86          | 712,234.02         | 32.16721 | -103.64746 |
| 6,174.99              | 5.18            | 254.32      | 6,169.74              | -57.16       | -128.45      | 425,226.24          | 712,231.85         | 32.16721 | -103.64746 |
| 6,199.99              | 5.18            | 254.24      | 6,194.64              | -57.77       | -130.62      | 425,225.63          | 712,229.68         | 32.16720 | -103.64747 |
| 6,224.99              | 5.14            | 254.49      | 6,219.54              | -58.38       | -132.79      | 425,225.02          | 712,227.51         | 32.16720 | -103.64748 |
| 6,249.99              | 5.18            | 254.92      | 6,244.43              | -58.97       | -134.95      | 425,224.43          | 712,225.34         | 32.16720 | -103.64749 |
| 6,274.99              | 5.14            | 255.58      | 6,269.33              | -59.54       | -137.13      | 425,223.86          | 712,223.17         | 32.16720 | -103.64749 |
| 6,299.99              | 5.24            | 255.29      | 6,294.23              | -60.11       | -139.32      | 425,223.29          | 712,220.98         | 32.16720 | -103.64750 |
| 6,324.99              | 5.20            | 254.89      | 6,319.13              | -60.70       | -141.52      | 425,222.70          | 712,218.78         | 32.16720 | -103.64751 |
| 6,349.99              | 4.95            | 256.05      | 6,344.03              | -61.25       | -143.66      | 425,222.15          | 712,216.64         | 32.16719 | -103.64751 |
| 6,374.99              | 4.63            | 256.69      | 6,368.94              | -61.74       | -145.69      | 425,221.65          | 712,214.61         | 32.16719 | -103.64752 |
| 6,399.99              | 4.41            | 258.46      | 6,393.86              | -62.17       | -147.61      | 425,221.23          | 712,212.69         | 32.16719 | -103.64753 |
| 6,424.99              | 4.27            | 258.72      | 6,418.79              | -62.54       | -149.46      | 425,220.86          | 712,210.83         | 32.16719 | -103.64753 |
| 6,449.99              | 4.17            | 259.96      | 6,443.72              | -62.88       | -151.27      | 425,220.52          | 712,209.03         | 32.16719 | -103.64754 |
| 6,474.99              | 4.11            | 258.31      | 6,468.66              | -63.22       | -153.04      | 425,220.18          | 712,207.25         | 32.16719 | -103.64754 |
| 6,499.99              | 4.08            | 260.40      | 6,493.59              | -63.55       | -154.80      | 425,219.85          | 712,205.50         | 32.16719 | -103.64755 |
| 6,524.99              | 3.94            | 260.01      | 6,518.53              | -63.85       | -156.52      | 425,219.55          | 712,203.78         | 32.16719 | -103.64756 |
| 6,549.99              | 4.02            | 260.01      | 6,543.47              | -64.15       | -158.23      | 425,219.25          | 712,202.07         | 32.16719 | -103.64756 |
| 6,574.99              | 3.96            | 259.99      | 6,568.41              | -64.45       | -159.94      | 425,218.95          | 712,200.35         | 32.16719 | -103.64757 |
| 6,599.99              | 3.89            | 259.58      | 6,593.35              | -64.76       | -161.63      | 425,218.64          | 712,198.67         | 32.16719 | -103.64757 |
| 6,624.99              | 3.77            | 260.39      | 6,618.30              | -65.05       | -163.27      | 425,218.35          | 712,197.03         | 32.16718 | -103.64758 |
| 6,649.99              | 3.79            | 259.87      | 6,643.24              | -65.33       | -164.89      | 425,218.07          | 712,195.40         | 32.16718 | -103.64758 |
| 6,674.99              | 3.77            | 260.37      | 6,668.19              | -65.61       | -166.52      | 425,217.79          | 712,193.78         | 32.16718 | -103.64759 |
| 6,699.99              | 3.77            | 260.10      | 6,693.13              | -65.89       | -168.14      | 425,217.51          | 712,192.16         | 32.16718 | -103.64759 |
| 6,724.99              | 3.69            | 261.37      | 6,718.08              | -66.15       | -169.74      | 425,217.25          | 712,190.55         | 32.16718 | -103.64760 |
| 6,749.99              | 3.68            | 259.91      | 6,743.03              | -66.42       | -171.33      | 425,216.98          | 712,188.97         | 32.16718 | -103.64760 |
| 6,774.99              | 3.70            | 260.26      | 6,767.98              | -66.69       | -172.91      | 425,216.71          | 712,187.38         | 32.16718 | -103.64761 |
| 6,799.99              | 3.71            | 260.57      | 6,792.93              | -66.96       | -174.51      | 425,216.44          | 712,185.79         | 32.16718 | -103.64761 |
| 6,824.99              | 3.70            | 259.11      | 6,817.87              | -67.25       | -176.10      | 425,216.15          | 712,184.20         | 32.16718 | -103.64762 |
| 6,849.99              | 3.64            | 260.44      | 6,842.82              | -67.53       | -177.67      | 425,215.87          | 712,182.62         | 32.16718 | -103.64762 |
| 6,874.99              | 3.65            | 260.22      | 6,867.77              | -67.80       | -179.24      | 425,215.60          | 712,181.06         | 32.16718 | -103.64763 |
| 6,899.99              | 3.63            | 260.36      | 6,892.72              | -68.07       | -180.80      | 425,215.33          | 712,179.49         | 32.16718 | -103.64763 |
| 6,924.99              | 3.66            | 259.45      | 6,917.67              | -68.34       | -182.37      | 425,215.06          | 712,177.93         | 32.16718 | -103.64764 |
| 6,949.99              | 3.55            | 260.50      | 6,942.62              | -68.62       | -183.91      | 425,214.78          | 712,176.38         | 32.16717 | -103.64764 |
| 6,974.99              | 3.43            | 260.91      | 6,967.57              | -68.86       | -185.42      | 425,214.54          | 712,174.88         | 32.16717 | -103.64765 |
| 6,999.99              | 3.47            | 262.05      | 6,992.53              | -69.09       | -186.90      | 425,214.31          | 712,173.39         | 32.16717 | -103.64765 |
| 7,024.99              | 3.59            | 260.58      | 7,017.48              | -69.32       | -188.43      | 425,214.08          | 712,171.87         | 32.16717 | -103.64766 |
| 7,049.99              | 3.51            | 260.89      | 7,042.43              | -69.57       | -189.95      | 425,213.83          | 712,170.34         | 32.16717 | -103.64766 |
| 7,074.99              | 3.43            | 261.29      | 7,067.39              | -69.80       | -191.45      | 425,213.60          | 712,168.85         | 32.16717 | -103.64767 |
| 7,099.99              | 3.36            | 260.83      | 7,092.34              | -70.03       | -192.91      | 425,213.37          | 712,167.38         | 32.16717 | -103.64767 |
| 7,124.99              | 3.34            | 260.32      | 7,117.30              | -70.27       | -194.35      | 425,213.13          | 712,165.94         | 32.16717 | -103.64768 |
| 7,149.99              | 3.28            | 260.73      | 7,142.26              | -70.51       | -195.78      | 425,212.89          | 712,164.52         | 32.16717 | -103.64768 |
| 7,174.99              | 3.30            | 261.04      | 7,167.22              | -70.74       | -197.19      | 425,212.66          | 712,163.10         | 32.16717 | -103.64769 |
| 7,199.99              | 3.20            | 260.77      | 7,192.18              | -70.96       | -198.59      | 425,212.44          | 712,161.70         | 32.16717 | -103.64769 |

# Survey Report - Geographic

|                  |                            |                                     |                                          |
|------------------|----------------------------|-------------------------------------|------------------------------------------|
| <b>Company:</b>  | COG Operating L L C        | <b>Local Co-ordinate Reference:</b> | Well Eider Federal 103H                  |
| <b>Project:</b>  | Lea County, NM (NAD27 NME) | <b>TVD Reference:</b>               | KB=26' @ 3551.39usft (Scandrift Freedom) |
| <b>Site:</b>     | Sec. 35, T 24 S., R 32 E   | <b>MD Reference:</b>                | KB=26' @ 3551.39usft (Scandrift Freedom) |
| <b>Well:</b>     | Eider Federal 103H         | <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                               |

| Survey                |                 |             |                       |              |              |                     |                    |          |            |  |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|----------|------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude  |  |
| 7,224.99              | 3.14            | 260.99      | 7,217.14              | -71.18       | -199.96      | 425,212.22          | 712,160.34         | 32.16717 | -103.64770 |  |
| 7,249.99              | 3.14            | 260.31      | 7,242.10              | -71.40       | -201.31      | 425,212.00          | 712,158.99         | 32.16717 | -103.64770 |  |
| 7,274.99              | 3.21            | 259.44      | 7,267.06              | -71.65       | -202.67      | 425,211.75          | 712,157.62         | 32.16717 | -103.64771 |  |
| 7,299.99              | 3.23            | 259.85      | 7,292.02              | -71.90       | -204.05      | 425,211.50          | 712,156.24         | 32.16717 | -103.64771 |  |
| 7,324.99              | 3.21            | 260.64      | 7,316.98              | -72.14       | -205.44      | 425,211.26          | 712,154.86         | 32.16717 | -103.64771 |  |
| 7,349.99              | 3.16            | 260.69      | 7,341.95              | -72.36       | -206.81      | 425,211.04          | 712,153.49         | 32.16717 | -103.64772 |  |
| 7,374.99              | 3.20            | 260.76      | 7,366.91              | -72.59       | -208.18      | 425,210.81          | 712,152.12         | 32.16716 | -103.64772 |  |
| 7,399.99              | 3.22            | 261.02      | 7,391.87              | -72.81       | -209.56      | 425,210.59          | 712,150.74         | 32.16716 | -103.64773 |  |
| 7,424.99              | 3.23            | 259.85      | 7,416.83              | -73.04       | -210.94      | 425,210.36          | 712,149.35         | 32.16716 | -103.64773 |  |
| 7,449.99              | 3.21            | 259.83      | 7,441.79              | -73.29       | -212.33      | 425,210.11          | 712,147.97         | 32.16716 | -103.64774 |  |
| 7,474.99              | 3.24            | 259.19      | 7,466.75              | -73.54       | -213.71      | 425,209.85          | 712,146.59         | 32.16716 | -103.64774 |  |
| 7,499.99              | 3.23            | 259.48      | 7,491.71              | -73.81       | -215.10      | 425,209.59          | 712,145.20         | 32.16716 | -103.64775 |  |
| 7,524.99              | 3.21            | 260.60      | 7,516.67              | -74.05       | -216.48      | 425,209.35          | 712,143.82         | 32.16716 | -103.64775 |  |
| 7,549.99              | 3.31            | 259.42      | 7,541.63              | -74.30       | -217.88      | 425,209.10          | 712,142.42         | 32.16716 | -103.64775 |  |
| 7,574.99              | 3.61            | 257.65      | 7,566.58              | -74.60       | -219.36      | 425,208.80          | 712,140.94         | 32.16716 | -103.64776 |  |
| 7,599.98              | 3.72            | 257.97      | 7,591.53              | -74.93       | -220.92      | 425,208.47          | 712,139.38         | 32.16716 | -103.64776 |  |
| 7,624.98              | 3.88            | 256.69      | 7,616.48              | -75.30       | -222.54      | 425,208.10          | 712,137.76         | 32.16716 | -103.64777 |  |
| 7,649.98              | 3.91            | 256.63      | 7,641.42              | -75.69       | -224.19      | 425,207.71          | 712,136.11         | 32.16716 | -103.64777 |  |
| 7,674.98              | 3.93            | 256.84      | 7,666.36              | -76.08       | -225.85      | 425,207.32          | 712,134.44         | 32.16716 | -103.64778 |  |
| 7,699.98              | 3.97            | 256.97      | 7,691.30              | -76.47       | -227.53      | 425,206.93          | 712,132.77         | 32.16715 | -103.64779 |  |
| 7,724.98              | 3.98            | 256.78      | 7,716.24              | -76.87       | -229.22      | 425,206.53          | 712,131.08         | 32.16715 | -103.64779 |  |
| 7,749.98              | 4.04            | 256.76      | 7,741.18              | -77.27       | -230.92      | 425,206.13          | 712,129.38         | 32.16715 | -103.64780 |  |
| 7,774.98              | 3.97            | 257.07      | 7,766.12              | -77.66       | -232.62      | 425,205.74          | 712,127.68         | 32.16715 | -103.64780 |  |
| 7,799.98              | 3.89            | 256.71      | 7,791.06              | -78.05       | -234.29      | 425,205.35          | 712,126.01         | 32.16715 | -103.64781 |  |
| 7,824.98              | 3.77            | 256.77      | 7,816.00              | -78.43       | -235.91      | 425,204.97          | 712,124.38         | 32.16715 | -103.64781 |  |
| 7,849.98              | 3.77            | 256.61      | 7,840.95              | -78.81       | -237.51      | 425,204.59          | 712,122.78         | 32.16715 | -103.64782 |  |
| 7,874.98              | 3.70            | 256.08      | 7,865.90              | -79.19       | -239.10      | 425,204.20          | 712,121.20         | 32.16715 | -103.64782 |  |
| 7,899.98              | 3.65            | 255.83      | 7,890.85              | -79.58       | -240.65      | 425,203.82          | 712,119.65         | 32.16715 | -103.64783 |  |
| 7,924.98              | 3.64            | 255.78      | 7,915.79              | -79.97       | -242.19      | 425,203.43          | 712,118.10         | 32.16714 | -103.64783 |  |
| 7,949.98              | 3.73            | 254.64      | 7,940.74              | -80.38       | -243.74      | 425,203.02          | 712,116.55         | 32.16714 | -103.64784 |  |
| 7,974.98              | 3.78            | 254.05      | 7,965.69              | -80.83       | -245.32      | 425,202.57          | 712,114.97         | 32.16714 | -103.64784 |  |
| 7,999.98              | 3.86            | 253.87      | 7,990.63              | -81.29       | -246.92      | 425,202.11          | 712,113.37         | 32.16714 | -103.64785 |  |
| 8,024.98              | 3.89            | 253.05      | 8,015.58              | -81.77       | -248.54      | 425,201.63          | 712,111.75         | 32.16714 | -103.64785 |  |
| 8,049.98              | 3.89            | 253.76      | 8,040.52              | -82.25       | -250.17      | 425,201.15          | 712,110.13         | 32.16714 | -103.64786 |  |
| 8,074.98              | 3.83            | 252.87      | 8,065.46              | -82.73       | -251.78      | 425,200.67          | 712,108.52         | 32.16714 | -103.64786 |  |
| 8,099.98              | 3.85            | 252.97      | 8,090.41              | -83.23       | -253.38      | 425,200.17          | 712,106.92         | 32.16714 | -103.64787 |  |
| 8,124.98              | 3.82            | 250.91      | 8,115.35              | -83.74       | -254.97      | 425,199.66          | 712,105.33         | 32.16713 | -103.64787 |  |
| 8,149.98              | 3.77            | 252.12      | 8,140.30              | -84.27       | -256.54      | 425,199.13          | 712,103.76         | 32.16713 | -103.64788 |  |
| 8,174.98              | 3.82            | 250.85      | 8,165.24              | -84.79       | -258.11      | 425,198.60          | 712,102.19         | 32.16713 | -103.64788 |  |
| 8,199.98              | 3.74            | 251.74      | 8,190.19              | -85.32       | -259.67      | 425,198.08          | 712,100.63         | 32.16713 | -103.64789 |  |
| 8,224.98              | 3.65            | 250.29      | 8,215.13              | -85.85       | -261.19      | 425,197.55          | 712,099.10         | 32.16713 | -103.64789 |  |
| 8,249.98              | 3.66            | 250.63      | 8,240.08              | -86.38       | -262.69      | 425,197.02          | 712,097.60         | 32.16713 | -103.64790 |  |
| 8,274.98              | 3.60            | 250.35      | 8,265.03              | -86.91       | -264.18      | 425,196.49          | 712,096.11         | 32.16713 | -103.64790 |  |
| 8,299.98              | 3.61            | 250.37      | 8,289.98              | -87.44       | -265.67      | 425,195.96          | 712,094.63         | 32.16712 | -103.64791 |  |
| 8,324.98              | 3.54            | 251.18      | 8,314.93              | -87.95       | -267.14      | 425,195.45          | 712,093.16         | 32.16712 | -103.64791 |  |
| 8,349.98              | 3.60            | 249.07      | 8,339.89              | -88.48       | -268.60      | 425,194.92          | 712,091.69         | 32.16712 | -103.64792 |  |
| 8,374.98              | 3.57            | 249.83      | 8,364.84              | -89.03       | -270.06      | 425,194.37          | 712,090.23         | 32.16712 | -103.64792 |  |
| 8,399.98              | 3.58            | 249.84      | 8,389.79              | -89.57       | -271.53      | 425,193.83          | 712,088.77         | 32.16712 | -103.64793 |  |
| 8,424.98              | 3.53            | 248.69      | 8,414.74              | -90.11       | -272.98      | 425,193.28          | 712,087.32         | 32.16712 | -103.64793 |  |
| 8,449.98              | 3.38            | 250.67      | 8,439.69              | -90.64       | -274.39      | 425,192.76          | 712,085.91         | 32.16712 | -103.64794 |  |
| 8,474.98              | 3.45            | 248.75      | 8,464.65              | -91.15       | -275.79      | 425,192.24          | 712,084.51         | 32.16711 | -103.64794 |  |
| 8,499.98              | 3.36            | 249.57      | 8,489.61              | -91.68       | -277.17      | 425,191.72          | 712,083.12         | 32.16711 | -103.64795 |  |
| 8,524.98              | 3.26            | 249.73      | 8,514.56              | -92.19       | -278.53      | 425,191.21          | 712,081.77         | 32.16711 | -103.64795 |  |
| 8,549.98              | 3.23            | 250.22      | 8,539.52              | -92.67       | -279.86      | 425,190.73          | 712,080.44         | 32.16711 | -103.64795 |  |
| 8,556.98              | 3.31            | 249.20      | 8,546.51              | -92.81       | -280.23      | 425,190.59          | 712,080.06         | 32.16711 | -103.64796 |  |

# Survey Report - Geographic

|                  |                            |                                     |                                         |
|------------------|----------------------------|-------------------------------------|-----------------------------------------|
| <b>Company:</b>  | COG Operating L L C        | <b>Local Co-ordinate Reference:</b> | Well Eider Federal 103H                 |
| <b>Project:</b>  | Lea County, NM (NAD27 NME) | <b>TVD Reference:</b>               | KB=26' @ 3551.39usft (Scandril Freedom) |
| <b>Site:</b>     | Sec. 35, T 24 S , R 32 E   | <b>MD Reference:</b>                | KB=26' @ 3551.39usft (Scandril Freedom) |
| <b>Well:</b>     | Eider Federal 103H         | <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                              |

| Survey                |                 |             |                       |              |              |                     |                    |                    |            |  |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|--------------------|------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude Longitude |            |  |
| 8,586.00              | 3.35            | 250.29      | 8,575.48              | -93.39       | -281.81      | 425,190.01          | 712,078.48         | 32.16711           | -103.64796 |  |
| 8,618.00              | 3.18            | 249.26      | 8,607.43              | -94.02       | -283.52      | 425,189.38          | 712,076.77         | 32.16711           | -103.64797 |  |
| 8,711.00              | 2.56            | 260.68      | 8,700.31              | -95.27       | -287.99      | 425,188.13          | 712,072.31         | 32.16710           | -103.64798 |  |
| 8,742.00              | 3.96            | 329.04      | 8,731.27              | -94.47       | -289.22      | 425,188.93          | 712,071.08         | 32.16711           | -103.64799 |  |
| 8,804.00              | 11.18           | 348.83      | 8,792.70              | -86.72       | -291.49      | 425,196.68          | 712,068.81         | 32.16713           | -103.64799 |  |
| 8,851.00              | 17.01           | 351.38      | 8,838.26              | -75.44       | -293.40      | 425,207.96          | 712,066.89         | 32.16716           | -103.64800 |  |
| 8,898.00              | 21.76           | 351.11      | 8,882.59              | -60.03       | -295.78      | 425,223.37          | 712,064.51         | 32.16720           | -103.64801 |  |
| 8,945.00              | 25.87           | 350.95      | 8,925.58              | -41.29       | -298.74      | 425,242.11          | 712,061.55         | 32.16725           | -103.64801 |  |
| 8,992.00              | 29.85           | 350.79      | 8,967.12              | -19.61       | -302.23      | 425,263.79          | 712,058.07         | 32.16731           | -103.64803 |  |
| 9,039.00              | 34.57           | 352.59      | 9,006.88              | 5.17         | -305.82      | 425,288.57          | 712,054.47         | 32.16738           | -103.64804 |  |
| 9,085.00              | 41.73           | 355.88      | 9,043.03              | 33.43        | -308.61      | 425,316.82          | 712,051.69         | 32.16746           | -103.64805 |  |
| 9,132.00              | 46.96           | 357.97      | 9,076.63              | 66.22        | -310.34      | 425,349.62          | 712,049.95         | 32.16755           | -103.64805 |  |
| 9,179.00              | 51.01           | 358.23      | 9,107.47              | 101.65       | -311.52      | 425,385.05          | 712,048.78         | 32.16765           | -103.64805 |  |
| 9,226.00              | 57.59           | 358.24      | 9,134.88              | 139.78       | -312.69      | 425,423.18          | 712,047.61         | 32.16775           | -103.64806 |  |
| 9,272.00              | 63.12           | 358.11      | 9,157.63              | 179.72       | -313.96      | 425,463.12          | 712,046.33         | 32.16786           | -103.64806 |  |
| 9,319.00              | 66.47           | 358.83      | 9,177.64              | 222.23       | -315.10      | 425,505.63          | 712,045.20         | 32.16798           | -103.64806 |  |
| 9,365.00              | 72.41           | 359.04      | 9,193.79              | 265.27       | -315.89      | 425,548.67          | 712,044.40         | 32.16810           | -103.64806 |  |
| 9,397.00              | 75.90           | 358.91      | 9,202.52              | 296.05       | -316.45      | 425,579.45          | 712,043.85         | 32.16818           | -103.64807 |  |
| 9,458.00              | 80.48           | 358.73      | 9,215.00              | 355.73       | -317.68      | 425,639.13          | 712,042.62         | 32.16834           | -103.64807 |  |
| 9,486.00              | 84.01           | 358.61      | 9,218.78              | 383.46       | -318.32      | 425,666.86          | 712,041.98         | 32.16842           | -103.64807 |  |
| 9,580.00              | 88.50           | 359.22      | 9,224.92              | 477.22       | -320.09      | 425,760.62          | 712,040.20         | 32.16868           | -103.64807 |  |
| 9,673.00              | 88.78           | 0.07        | 9,227.13              | 570.19       | -320.67      | 425,853.59          | 712,039.63         | 32.16893           | -103.64807 |  |
| 9,766.00              | 89.09           | 0.93        | 9,228.86              | 663.17       | -319.86      | 425,946.57          | 712,040.44         | 32.16919           | -103.64807 |  |
| 9,861.00              | 89.76           | 359.01      | 9,229.81              | 758.16       | -319.91      | 426,041.56          | 712,040.39         | 32.16945           | -103.64807 |  |
| 9,954.00              | 89.90           | 358.84      | 9,230.08              | 851.14       | -321.65      | 426,134.54          | 712,038.64         | 32.16971           | -103.64807 |  |
| 10,047.00             | 89.09           | 358.93      | 9,230.90              | 944.12       | -323.46      | 426,227.52          | 712,036.83         | 32.16996           | -103.64807 |  |
| 10,140.00             | 88.78           | 359.40      | 9,232.63              | 1,037.09     | -324.82      | 426,320.49          | 712,035.48         | 32.17022           | -103.64808 |  |
| 10,234.00             | 90.10           | 359.09      | 9,233.55              | 1,131.08     | -326.06      | 426,414.48          | 712,034.24         | 32.17048           | -103.64808 |  |
| 10,327.00             | 86.57           | 359.07      | 9,236.25              | 1,224.01     | -327.55      | 426,507.41          | 712,032.75         | 32.17073           | -103.64808 |  |
| 10,420.00             | 87.32           | 0.17        | 9,241.21              | 1,316.87     | -328.16      | 426,600.27          | 712,032.13         | 32.17099           | -103.64808 |  |
| 10,514.00             | 87.04           | 0.42        | 9,245.83              | 1,410.76     | -327.68      | 426,694.16          | 712,032.62         | 32.17124           | -103.64808 |  |
| 10,607.00             | 87.41           | 0.82        | 9,250.34              | 1,503.64     | -326.68      | 426,787.04          | 712,033.62         | 32.17150           | -103.64807 |  |
| 10,701.00             | 91.50           | 0.71        | 9,251.23              | 1,597.61     | -325.42      | 426,881.01          | 712,034.87         | 32.17176           | -103.64807 |  |
| 10,796.00             | 92.87           | 1.95        | 9,247.61              | 1,692.51     | -323.22      | 426,975.91          | 712,037.08         | 32.17202           | -103.64806 |  |
| 10,889.00             | 91.56           | 0.59        | 9,244.01              | 1,785.42     | -321.16      | 427,068.82          | 712,039.14         | 32.17227           | -103.64805 |  |
| 10,983.00             | 91.47           | 0.42        | 9,241.53              | 1,879.38     | -320.33      | 427,162.78          | 712,039.97         | 32.17253           | -103.64805 |  |
| 11,076.00             | 89.73           | 357.73      | 9,240.56              | 1,972.35     | -321.83      | 427,255.75          | 712,038.46         | 32.17279           | -103.64805 |  |
| 11,170.00             | 89.99           | 357.60      | 9,240.78              | 2,066.27     | -325.66      | 427,349.67          | 712,034.63         | 32.17305           | -103.64806 |  |
| 11,263.00             | 90.10           | 358.17      | 9,240.71              | 2,159.21     | -329.09      | 427,442.61          | 712,031.20         | 32.17330           | -103.64807 |  |
| 11,357.00             | 90.88           | 359.16      | 9,239.91              | 2,253.18     | -331.28      | 427,536.58          | 712,029.01         | 32.17356           | -103.64807 |  |
| 11,452.00             | 91.75           | 359.66      | 9,237.73              | 2,348.15     | -332.26      | 427,631.55          | 712,028.03         | 32.17382           | -103.64807 |  |
| 11,545.00             | 89.34           | 357.97      | 9,236.84              | 2,441.11     | -334.19      | 427,724.51          | 712,026.11         | 32.17408           | -103.64808 |  |
| 11,638.00             | 88.50           | 358.04      | 9,238.60              | 2,534.04     | -337.42      | 427,817.44          | 712,022.87         | 32.17433           | -103.64809 |  |
| 11,731.00             | 91.19           | 359.60      | 9,238.85              | 2,627.01     | -339.34      | 427,910.41          | 712,020.96         | 32.17459           | -103.64809 |  |
| 11,825.00             | 92.45           | 0.00        | 9,235.86              | 2,720.96     | -339.67      | 428,004.36          | 712,020.63         | 32.17485           | -103.64809 |  |
| 11,919.00             | 90.91           | 359.06      | 9,233.11              | 2,814.91     | -340.44      | 428,098.31          | 712,019.86         | 32.17510           | -103.64809 |  |
| 12,012.00             | 90.99           | 359.40      | 9,231.56              | 2,907.89     | -341.69      | 428,191.29          | 712,018.61         | 32.17536           | -103.64809 |  |
| 12,106.00             | 92.03           | 358.76      | 9,229.09              | 3,001.84     | -343.19      | 428,285.24          | 712,017.10         | 32.17562           | -103.64810 |  |
| 12,199.00             | 93.07           | 359.22      | 9,224.95              | 3,094.73     | -344.83      | 428,378.13          | 712,015.46         | 32.17587           | -103.64810 |  |
| 12,293.00             | 92.31           | 358.78      | 9,220.54              | 3,188.61     | -346.47      | 428,472.01          | 712,013.82         | 32.17613           | -103.64810 |  |
| 12,386.00             | 91.02           | 357.96      | 9,217.84              | 3,281.54     | -349.12      | 428,564.93          | 712,011.18         | 32.17639           | -103.64811 |  |
| 12,479.00             | 91.16           | 358.12      | 9,216.07              | 3,374.46     | -352.30      | 428,657.86          | 712,008.00         | 32.17664           | -103.64812 |  |
| 12,572.00             | 89.57           | 357.40      | 9,215.47              | 3,467.39     | -355.93      | 428,750.79          | 712,004.37         | 32.17690           | -103.64813 |  |
| 12,666.00             | 89.26           | 356.66      | 9,216.43              | 3,561.26     | -360.80      | 428,844.65          | 711,999.50         | 32.17716           | -103.64814 |  |
| 12,760.00             | 88.56           | 356.24      | 9,218.22              | 3,655.06     | -366.62      | 428,938.46          | 711,993.68         | 32.17741           | -103.64816 |  |

# Survey Report - Geographic

|                  |                            |                                     |                                         |
|------------------|----------------------------|-------------------------------------|-----------------------------------------|
| <b>Company:</b>  | COG Operating L L C        | <b>Local Co-ordinate Reference:</b> | Well Eider Federal 103H                 |
| <b>Project:</b>  | Lea County, NM (NAD27 NME) | <b>TVD Reference:</b>               | KB=26' @ 3551.39usft (Scandril Freedom) |
| <b>Site:</b>     | Sec. 35, T 24 S, R 32 E    | <b>MD Reference:</b>                | KB=26' @ 3551.39usft (Scandril Freedom) |
| <b>Well:</b>     | Eider Federal 103H         | <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                              |

| Survey                |                 |             |                       |              |              |                     |                    |          |            |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|----------|------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude  |
| 12,854.00             | 89.20           | 359.03      | 9,220.06              | 3,748.95     | -370.50      | 429,032.35          | 711,989.80         | 32.17767 | -103.64817 |
| 12,948.00             | 90.66           | 0.68        | 9,220.17              | 3,842.94     | -370.74      | 429,126.34          | 711,989.56         | 32.17793 | -103.64817 |
| 13,042.00             | 90.21           | 0.93        | 9,219.46              | 3,936.93     | -369.41      | 429,220.33          | 711,990.88         | 32.17819 | -103.64816 |
| 13,136.00             | 89.03           | 0.76        | 9,220.08              | 4,030.92     | -368.03      | 429,314.32          | 711,992.27         | 32.17845 | -103.64816 |
| 13,230.00             | 90.57           | 0.63        | 9,220.41              | 4,124.91     | -366.89      | 429,408.31          | 711,993.41         | 32.17871 | -103.64815 |
| 13,324.00             | 90.85           | 0.32        | 9,219.25              | 4,218.90     | -366.11      | 429,502.30          | 711,994.19         | 32.17896 | -103.64814 |
| 13,417.00             | 90.66           | 0.52        | 9,218.02              | 4,311.89     | -365.43      | 429,595.28          | 711,994.87         | 32.17922 | -103.64814 |
| 13,511.00             | 90.18           | 359.49      | 9,217.33              | 4,405.88     | -365.42      | 429,689.28          | 711,994.88         | 32.17948 | -103.64814 |
| 13,604.00             | 90.57           | 0.60        | 9,216.72              | 4,498.88     | -365.35      | 429,782.28          | 711,994.95         | 32.17973 | -103.64814 |
| 13,697.00             | 89.26           | 0.07        | 9,216.86              | 4,591.87     | -364.80      | 429,875.27          | 711,995.49         | 32.17999 | -103.64813 |
| 13,790.00             | 88.36           | 359.42      | 9,218.79              | 4,684.85     | -365.22      | 429,968.25          | 711,995.08         | 32.18024 | -103.64813 |
| 13,884.00             | 89.23           | 359.38      | 9,220.77              | 4,778.82     | -366.20      | 430,062.22          | 711,994.10         | 32.18050 | -103.64813 |
| 13,977.00             | 90.91           | 0.03        | 9,220.66              | 4,871.82     | -366.68      | 430,155.22          | 711,993.62         | 32.18076 | -103.64813 |
| 14,070.00             | 90.85           | 0.75        | 9,219.23              | 4,964.81     | -366.05      | 430,248.21          | 711,994.25         | 32.18101 | -103.64813 |
| 14,164.00             | 90.41           | 0.79        | 9,218.20              | 5,058.79     | -364.78      | 430,342.19          | 711,995.51         | 32.18127 | -103.64812 |
| 14,257.00             | 89.87           | 0.43        | 9,217.97              | 5,151.79     | -363.79      | 430,435.18          | 711,996.50         | 32.18153 | -103.64812 |
| 14,350.00             | 93.60           | 0.47        | 9,215.15              | 5,244.72     | -363.06      | 430,528.12          | 711,997.23         | 32.18178 | -103.64811 |
| 14,444.00             | 92.14           | 358.57      | 9,210.45              | 5,338.60     | -363.85      | 430,621.99          | 711,996.45         | 32.18204 | -103.64811 |
| 14,537.00             | 92.23           | 357.75      | 9,206.90              | 5,431.48     | -366.83      | 430,714.88          | 711,993.46         | 32.18230 | -103.64812 |
| 14,631.00             | 88.33           | 358.43      | 9,206.44              | 5,525.41     | -369.97      | 430,808.81          | 711,990.33         | 32.18256 | -103.64813 |
| 14,724.00             | 88.28           | 357.82      | 9,209.19              | 5,618.32     | -373.01      | 430,901.72          | 711,987.29         | 32.18281 | -103.64814 |
| 14,818.00             | 87.32           | 357.74      | 9,212.80              | 5,712.17     | -376.65      | 430,995.57          | 711,983.65         | 32.18307 | -103.64815 |
| 14,912.00             | 88.08           | 358.79      | 9,216.57              | 5,806.05     | -379.49      | 431,089.45          | 711,980.81         | 32.18333 | -103.64816 |
| 15,005.00             | 89.26           | 359.10      | 9,218.73              | 5,899.01     | -381.20      | 431,182.41          | 711,979.09         | 32.18358 | -103.64816 |
| 15,098.00             | 89.51           | 358.68      | 9,219.73              | 5,991.99     | -383.00      | 431,275.39          | 711,977.29         | 32.18384 | -103.64816 |
| 15,191.00             | 92.26           | 0.29        | 9,218.29              | 6,084.96     | -383.84      | 431,368.36          | 711,976.46         | 32.18409 | -103.64816 |
| 15,285.00             | 91.44           | 0.01        | 9,215.26              | 6,178.91     | -383.59      | 431,462.31          | 711,976.70         | 32.18435 | -103.64816 |
| 15,379.00             | 92.37           | 0.71        | 9,212.13              | 6,272.86     | -383.00      | 431,556.26          | 711,977.29         | 32.18461 | -103.64816 |
| 15,472.00             | 92.54           | 0.84        | 9,208.15              | 6,365.76     | -381.75      | 431,649.16          | 711,978.55         | 32.18487 | -103.64815 |
| 15,565.00             | 91.39           | 0.06        | 9,204.96              | 6,458.70     | -381.02      | 431,742.10          | 711,979.28         | 32.18512 | -103.64815 |
| 15,659.00             | 90.35           | 359.00      | 9,203.53              | 6,552.69     | -381.79      | 431,836.09          | 711,978.51         | 32.18538 | -103.64815 |
| 15,754.00             | 91.69           | 0.21        | 9,201.84              | 6,647.66     | -382.44      | 431,931.06          | 711,977.85         | 32.18564 | -103.64815 |
| 15,847.00             | 89.54           | 0.46        | 9,200.84              | 6,740.65     | -381.90      | 432,024.05          | 711,978.40         | 32.18590 | -103.64814 |
| 15,942.00             | 88.89           | 0.34        | 9,202.15              | 6,835.64     | -381.24      | 432,119.04          | 711,979.06         | 32.18616 | -103.64814 |
| 16,036.00             | 88.39           | 0.78        | 9,204.38              | 6,929.61     | -380.32      | 432,213.01          | 711,979.98         | 32.18642 | -103.64814 |
| 16,129.00             | 87.24           | 0.47        | 9,207.92              | 7,022.53     | -379.30      | 432,305.93          | 711,980.99         | 32.18667 | -103.64813 |
| 16,222.00             | 88.25           | 359.24      | 9,211.58              | 7,115.46     | -379.54      | 432,398.86          | 711,980.76         | 32.18693 | -103.64813 |
| 16,316.00             | 87.52           | 359.31      | 9,215.05              | 7,209.39     | -380.73      | 432,492.79          | 711,979.57         | 32.18718 | -103.64813 |
| 16,409.00             | 89.43           | 359.06      | 9,217.53              | 7,302.34     | -382.05      | 432,585.74          | 711,978.25         | 32.18744 | -103.64813 |
| 16,436.00             | 89.62           | 359.67      | 9,217.75              | 7,329.34     | -382.35      | 432,612.74          | 711,977.95         | 32.18751 | -103.64813 |
| 16,505.00             | 89.12           | 0.40        | 9,218.51              | 7,398.33     | -382.31      | 432,681.73          | 711,977.99         | 32.18770 | -103.64813 |
| 16,560.00             | 89.12           | 0.40        | 9,219.35              | 7,453.32     | -381.92      | 432,736.72          | 711,978.37         | 32.18785 | -103.64813 |

# Survey Report - Geographic

|                  |                            |                                     |                                         |
|------------------|----------------------------|-------------------------------------|-----------------------------------------|
| <b>Company:</b>  | COG Operating L L C        | <b>Local Co-ordinate Reference:</b> | Well Eider Federal 103H                 |
| <b>Project:</b>  | Lea County, NM (NAD27 NME) | <b>TVD Reference:</b>               | KB=26' @ 3551.39usft (Scandril Freedom) |
| <b>Site:</b>     | Sec. 35, T 24 S. , R 32 E  | <b>MD Reference:</b>                | KB=26' @ 3551.39usft (Scandril Freedom) |
| <b>Well:</b>     | Eider Federal 103H         | <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                              |

| Design Annotations    |                       |                   |             |                                  |
|-----------------------|-----------------------|-------------------|-------------|----------------------------------|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |             | Comment                          |
|                       |                       | +N-S (usft)       | +E-W (usft) |                                  |
| 8,556.98              | 8,546.51              | -92.81            | -280.23     | Tie in to Gyro Surveys @ 8557'MD |
| 8,586.00              | 8,575.48              | -93.39            | -281.81     | First MWD Survey @ 8586'MD       |
| 9,159.89              | 9,095.24              | 86.98             | -311.05     | FTP @ 9159'MD (330'FSL)          |
| 16,452.62             | 9,217.88              | 7,345.96          | -382.42     | LTP @ 16452'MD (330'FNL)         |
| 16,505.00             | 9,218.51              | 7,398.33          | -382.31     | Last MWD Survey @ 16505'MD       |
| 16,560.00             | 9,219.35              | 7,453.32          | -381.92     | PTB @ TD @ 16560'MD              |

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