



**NM OIL CONSERVATION**  
ARTESIA DISTRICT

FEB 19 2015

RECEIVED

June 13, 2014

Concho Resources, Inc.  
One Concho Center  
600 W. Illinois Avenue  
Midland, Texas 79701

Attn: Kanicia Castillo

RE: **SRO State Com No. 045H**

Please find enclosed a copy of the survey from 0.00' to 2,340.00' ran on the above referenced well.

Sincerely,

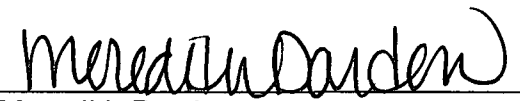
  
Keith Havelka  
Operations

STATE OF TEXAS §

COUNTY OF NUECES §

This instrument was acknowledged before me on the 13<sup>th</sup> day of June, A.D., 2014, by Keith Havelka.



  
Meredith Darden  
Notary Public, State of Texas

Company: COG Operating, LLC (Concho)

Lease/Well: SRO State Com/No. 045H



Rig Name: Scan Freedom

State/County: New Mexico/Eddy

Latitude: 32.05, Longitude: -104.11

GRID North is 0.12 Degrees East of True North

VS-Azi: 0.00 Degrees



Depth Reference : RKB= 27 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut

Minimum Curvature Method

Report Date/Time: 6/13/2014 / 14:19

VES Survey International

West Texas

(432) 563-5444

Surveyor: Bryan Massey

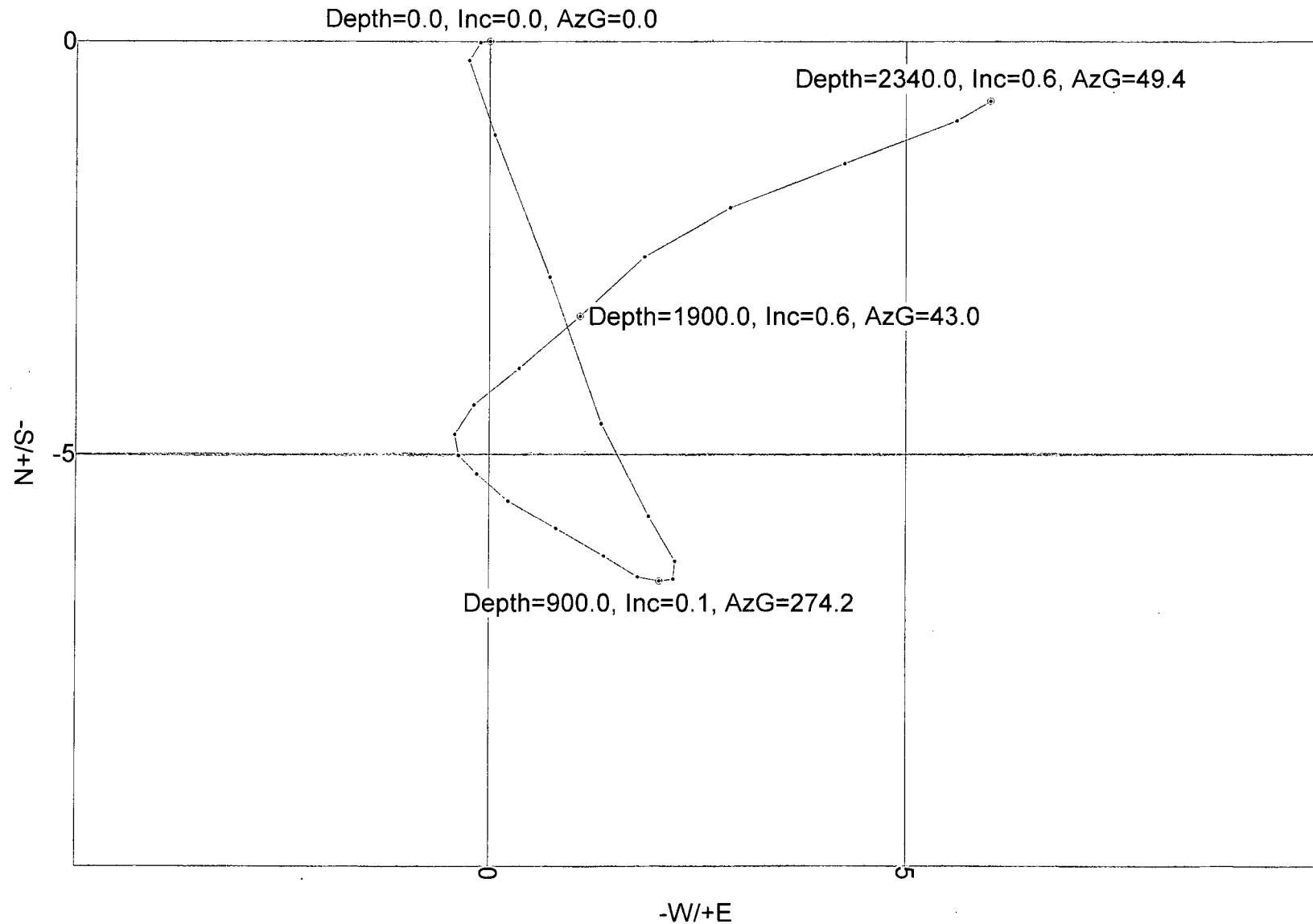
SRO State Com No. 045H / API 30-015-41143

| Measured<br>Depth<br>FT | Incl<br>Angle<br>Deg | Drift<br>Direction<br>Deg | TVD<br>FT | +N/-S<br>FT | +E/-W<br>FT | Vertical<br>Section<br>FT | Closure<br>Distance<br>FT | Closure<br>Direction<br>Deg | Dogleg<br>Severity<br>Deg/100 |
|-------------------------|----------------------|---------------------------|-----------|-------------|-------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 0.00                    | 0.00                 | 0.00                      | 0.00      | 0.00        | 0.00        | 0.00                      | 0.00                      | 0.00                        | ****                          |
| 100.00                  | 0.14                 | 262.56                    | 100.00    | -0.02       | -0.12       | -0.02                     | 0.12                      | 262.56                      | 0.14                          |
| 200.00                  | 0.23                 | 184.94                    | 200.00    | -0.23       | -0.25       | -0.23                     | 0.34                      | 227.37                      | 0.24                          |
| 300.00                  | 0.89                 | 154.92                    | 299.99    | -1.13       | 0.06        | -1.13                     | 1.14                      | 176.97                      | 0.70                          |
| 400.00                  | 1.23                 | 161.64                    | 399.98    | -2.85       | 0.73        | -2.85                     | 2.94                      | 165.73                      | 0.36                          |
| 500.00                  | 0.93                 | 159.68                    | 499.96    | -4.63       | 1.34        | -4.63                     | 4.82                      | 163.80                      | 0.30                          |
| 600.00                  | 0.53                 | 141.30                    | 599.95    | -5.75       | 1.91        | -5.75                     | 6.06                      | 161.59                      | 0.46                          |
| 700.00                  | 0.22                 | 171.47                    | 699.95    | -6.29       | 2.23        | -6.29                     | 6.68                      | 160.50                      | 0.36                          |
| 800.00                  | 0.06                 | 238.10                    | 799.95    | -6.51       | 2.21        | -6.51                     | 6.88                      | 161.26                      | 0.20                          |
| 900.00                  | 0.14                 | 274.21                    | 899.95    | -6.53       | 2.04        | -6.53                     | 6.84                      | 162.65                      | 0.09                          |
| 1000.00                 | 0.16                 | 286.92                    | 999.95    | -6.48       | 1.79        | -6.48                     | 6.72                      | 164.60                      | 0.04                          |
| 1100.00                 | 0.39                 | 307.77                    | 1099.95   | -6.23       | 1.38        | -6.23                     | 6.38                      | 167.51                      | 0.25                          |
| 1200.00                 | 0.38                 | 292.49                    | 1199.94   | -5.89       | 0.80        | -5.89                     | 5.95                      | 172.24                      | 0.10                          |
| 1300.00                 | 0.39                 | 306.55                    | 1299.94   | -5.57       | 0.23        | -5.57                     | 5.57                      | 177.65                      | 0.09                          |
| 1400.00                 | 0.19                 | 319.75                    | 1399.94   | -5.24       | -0.15       | -5.24                     | 5.24                      | 181.66                      | 0.21                          |
| 1500.00                 | 0.17                 | 310.78                    | 1499.94   | -5.01       | -0.37       | -5.01                     | 5.03                      | 184.22                      | 0.04                          |
| 1600.00                 | 0.20                 | 21.28                     | 1599.94   | -4.76       | -0.42       | -4.76                     | 4.77                      | 185.01                      | 0.21                          |
| 1700.00                 | 0.29                 | 40.52                     | 1699.94   | -4.40       | -0.19       | -4.40                     | 4.40                      | 182.44                      | 0.12                          |
| 1800.00                 | 0.52                 | 56.64                     | 1799.94   | -3.96       | 0.36        | -3.96                     | 3.97                      | 174.85                      | 0.25                          |

| Measured<br>Depth<br>FT | Incl<br>Angle<br>Deg | Drift<br>Direction<br>Deg | TVD<br>FT | +N/-S<br>FT | +E/-W<br>FT | Vertical<br>Section<br>FT | Closure<br>Distance<br>FT | Closure<br>Direction<br>Deg | Dogleg<br>Severity<br>Deg/100 |
|-------------------------|----------------------|---------------------------|-----------|-------------|-------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 1900.00                 | 0.59                 | 43.04                     | 1899.93   | -3.33       | 1.09        | -3.33                     | 3.50                      | 161.90                      | 0.15                          |
| 2000.00                 | 0.62                 | 50.53                     | 1999.93   | -2.61       | 1.86        | -2.61                     | 3.20                      | 144.48                      | 0.08                          |
| 2100.00                 | 0.76                 | 68.19                     | 2099.92   | -2.02       | 2.89        | -2.02                     | 3.52                      | 124.88                      | 0.25                          |
| 2200.00                 | 0.93                 | 69.09                     | 2199.91   | -1.48       | 4.26        | -1.48                     | 4.51                      | 109.14                      | 0.18                          |
| 2300.00                 | 0.72                 | 68.88                     | 2299.90   | -0.96       | 5.61        | -0.96                     | 5.69                      | 99.76                       | 0.22                          |
| 2340.00                 | 0.65                 | 49.36                     | 2339.90   | -0.73       | 6.01        | -0.73                     | 6.05                      | 96.90                       | 0.60                          |



VES Survey International  
West Texas  
(432) 563-5444  
Surveyor: Bryan Massey  
SRO State Com No. 045H / API 30-015-41143



VES Survey Date: 06/06/2014



NM OIL CONSERVATION  
ARTESIA DISTRICT

FEB 19 2015

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## **COG Operating, LLC**

Eddy County, NM (NAD 27)

Sec 17, T26S, R28E

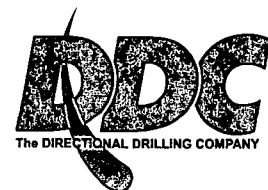
SRO State Unit #45H

**Wellbore #1**

**Design: Wellbore #1**

## **Survey Report - Geographic**

29 July, 2014





DDC  
Survey Report - Geographic



|           |                          |                              |                                       |
|-----------|--------------------------|------------------------------|---------------------------------------|
| Company:  | COG Operating, LLC       | Local Co-ordinate Reference: | Well SRO State Unit #45H              |
| Project:  | Eddy County, NM (NAD 27) | TVD Reference:               | Well @ 3108.0usft (Scandrill Freedom) |
| Site:     | Sec 17, T26S, R28E       | MD Reference:                | Well @ 3108.0usft (Scandrill Freedom) |
| Well:     | SRO State Unit #45H      | North Reference:             | Grid                                  |
| Wellbore: | Wellbore #1              | Survey Calculation Method:   | Minimum Curvature                     |
| Design:   | Wellbore #1              | Database:                    | EDM 5000.1 Single User Db             |

|             |                                      |               |                |
|-------------|--------------------------------------|---------------|----------------|
| Project     | Eddy County, NM (NAD 27)             |               |                |
| Map System: | US State Plane 1927 (Exact solution) | System Datum: | Mean Sea Level |
| Geo Datum:  | NAD 1927 (NADCON CONUS)              |               |                |
| Map Zone:   | New Mexico East 3001                 |               |                |

|                       |                    |                   |                  |
|-----------------------|--------------------|-------------------|------------------|
| Site                  | Sec 17, T26S, R28E |                   |                  |
| Site Position:        | Map                | Northing:         | 381,689.10 usft  |
| From:                 |                    | Easting:          | 570,092.60 usft  |
| Position Uncertainty: | 0.0 usft           | Slot Radius:      | 13-3/16 "        |
|                       |                    | Latitude:         | 32° 2' 57.035 N  |
|                       |                    | Longitude:        | 104° 6' 25.573 W |
|                       |                    | Grid Convergence: | 0.12 °           |

|                      |                     |                     |                  |
|----------------------|---------------------|---------------------|------------------|
| Well                 | SRO State Unit #45H |                     |                  |
| Well Position        | +N/-S               | 0.0 usft            | Northing:        |
|                      | +E/-W               | 0.0 usft            | Easting:         |
| Position Uncertainty | 0.0 usft            | Wellhead Elevation: | 0.0 usft         |
|                      |                     | Latitude:           | 32° 2' 57.010 N  |
|                      |                     | Longitude:          | 104° 6' 26.149 W |
|                      |                     | Ground Level:       | 3,082.0 usft     |

|           |             |             |                |
|-----------|-------------|-------------|----------------|
| Wellbore  | Wellbore #1 |             |                |
| Magnetics | Model Name  | Sample Date | Declination    |
|           |             |             | (°)            |
|           | IGRF2010    | 7/7/2014    | 7.44           |
|           |             |             | Dip Angle      |
|           |             |             | (°)            |
|           |             |             | 59.86          |
|           |             |             | Field Strength |
|           |             |             | (nT)           |
|           |             |             | 48,149         |

|                   |                  |               |           |
|-------------------|------------------|---------------|-----------|
| Design            | Wellbore #1      |               |           |
| Audit Notes:      |                  |               |           |
| Version:          | 1.0              | Phase:        | ACTUAL    |
|                   |                  | Tie On Depth: | 0.0       |
| Vertical Section: | Depth From (TVD) | +N/-S         | +E/-W     |
|                   | (usft)           | (usft)        | (usft)    |
|                   | 0.0              | 0.0           | 0.0       |
|                   |                  |               | Direction |
|                   |                  |               | (°)       |
|                   |                  |               | 179.79    |

|                |                |                           |                |
|----------------|----------------|---------------------------|----------------|
| Survey Program | Date 7/29/2014 |                           |                |
| From           | To             | Survey (Wellbore)         | Tool Name      |
| (usft)         | (usft)         |                           |                |
| 100.0          | 2,340.0        | Gyro Survey (Wellbore #1) | Good_gyro      |
| 2,466.0        | 17,774.0       | MWD (Wellbore #1)         | MWD default    |
|                |                |                           | Description    |
|                |                |                           | Good Gyro      |
|                |                |                           | MWD - Standard |

|          |             |         |          |        |        |            |            |                 |                  |  |
|----------|-------------|---------|----------|--------|--------|------------|------------|-----------------|------------------|--|
| Survey   |             |         |          |        |        |            |            |                 |                  |  |
| Measured | Inclination | Azimuth | Vertical | +N/-S  | +E/-W  | Map        | Map        | Latitude        | Longitude        |  |
| Depth    | (°)         | (°)     | Depth    | (usft) | (usft) | Northing   | Easting    |                 |                  |  |
| (usft)   |             |         | (usft)   |        |        | (usft)     | (usft)     |                 |                  |  |
| 0.0      | 0.00        | 0.00    | 0.0      | 0.0    | 0.0    | 381,686.50 | 570,043.10 | 32° 2' 57.010 N | 104° 6' 26.149 W |  |
| 100.0    | 0.14        | 262.56  | 100.0    | 0.0    | -0.1   | 381,686.48 | 570,042.98 | 32° 2' 57.010 N | 104° 6' 26.150 W |  |
| 200.0    | 0.23        | 184.94  | 200.0    | -0.2   | -0.3   | 381,686.27 | 570,042.84 | 32° 2' 57.008 N | 104° 6' 26.152 W |  |
| 300.0    | 0.89        | 154.92  | 300.0    | -1.1   | 0.1    | 381,685.36 | 570,043.16 | 32° 2' 56.999 N | 104° 6' 26.148 W |  |
| 400.0    | 1.23        | 161.64  | 400.0    | -2.9   | 0.7    | 381,683.64 | 570,043.82 | 32° 2' 56.982 N | 104° 6' 26.140 W |  |
| 500.0    | 0.93        | 159.68  | 500.0    | -4.6   | 1.3    | 381,681.86 | 570,044.44 | 32° 2' 56.964 N | 104° 6' 26.133 W |  |
| 600.0    | 0.53        | 141.30  | 600.0    | -5.8   | 1.9    | 381,680.74 | 570,045.01 | 32° 2' 56.953 N | 104° 6' 26.127 W |  |
| 700.0    | 0.22        | 171.47  | 699.9    | -6.3   | 2.2    | 381,680.19 | 570,045.33 | 32° 2' 56.948 N | 104° 6' 26.123 W |  |
| 800.0    | 0.06        | 238.10  | 799.9    | -6.5   | 2.2    | 381,679.97 | 570,045.31 | 32° 2' 56.946 N | 104° 6' 26.123 W |  |
| 900.0    | 0.14        | 274.21  | 899.9    | -6.5   | 2.0    | 381,679.95 | 570,045.15 | 32° 2' 56.946 N | 104° 6' 26.125 W |  |
| 1,000.0  | 0.16        | 286.92  | 999.9    | -6.5   | 1.8    | 381,680.00 | 570,044.89 | 32° 2' 56.946 N | 104° 6' 26.128 W |  |



DDC  
Survey Report - Geographic



|                  |                          |                                     |                                       |
|------------------|--------------------------|-------------------------------------|---------------------------------------|
| <b>Company:</b>  | COG Operating, LLC       | <b>Local Co-ordinate Reference:</b> | Well SRO State Unit #45H              |
| <b>Project:</b>  | Eddy County, NM (NAD 27) | <b>TVD Reference:</b>               | Well @ 3108.0usft (Scandrill Freedom) |
| <b>Site:</b>     | Sec 17, T26S, R28E       | <b>MD Reference:</b>                | Well @ 3108.0usft (Scandrill Freedom) |
| <b>Well:</b>     | SRO State Unit #45H      | <b>North Reference:</b>             | Grid                                  |
| <b>Wellbore:</b> | Wellbore #1              | <b>Survey Calculation Method:</b>   | Minimum Curvature                     |
| <b>Design:</b>   | Wellbore #1              | <b>Database:</b>                    | EDM 5000.1 Single User Db             |

| Survey                                  |                 |             |                       |              |              |                     |                    |                 |                  |
|-----------------------------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-----------------|------------------|
| Measured Depth (usft)                   | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude        | Longitude        |
| 1,100.0                                 | 0.39            | 307.77      | 1,099.9               | -6.2         | 1.4          | 381,680.25          | 570,044.49         | 32° 2' 56.949 N | 104° 6' 26.133 W |
| 1,200.0                                 | 0.38            | 292.49      | 1,199.9               | -5.9         | 0.8          | 381,680.59          | 570,043.92         | 32° 2' 56.952 N | 104° 6' 26.139 W |
| 1,300.0                                 | 0.39            | 306.55      | 1,299.9               | -5.6         | 0.2          | 381,680.92          | 570,043.34         | 32° 2' 56.955 N | 104° 6' 26.146 W |
| 1,400.0                                 | 0.19            | 319.75      | 1,399.9               | -5.3         | -0.1         | 381,681.25          | 570,042.95         | 32° 2' 56.958 N | 104° 6' 26.150 W |
| 1,500.0                                 | 0.17            | 310.78      | 1,499.9               | -5.0         | -0.4         | 381,681.47          | 570,042.74         | 32° 2' 56.961 N | 104° 6' 26.153 W |
| 1,600.0                                 | 0.20            | 21.28       | 1,599.9               | -4.8         | -0.4         | 381,681.73          | 570,042.69         | 32° 2' 56.963 N | 104° 6' 26.154 W |
| 1,700.0                                 | 0.29            | 40.52       | 1,699.9               | -4.4         | -0.2         | 381,682.08          | 570,042.91         | 32° 2' 56.967 N | 104° 6' 26.151 W |
| 1,800.0                                 | 0.52            | 56.64       | 1,799.9               | -4.0         | 0.4          | 381,682.53          | 570,043.46         | 32° 2' 56.971 N | 104° 6' 26.145 W |
| 1,900.0                                 | 0.59            | 43.04       | 1,899.9               | -3.3         | 1.1          | 381,683.15          | 570,044.19         | 32° 2' 56.977 N | 104° 6' 26.136 W |
| 2,000.0                                 | 0.62            | 50.53       | 1,999.9               | -2.6         | 1.9          | 381,683.87          | 570,044.96         | 32° 2' 56.984 N | 104° 6' 26.127 W |
| 2,100.0                                 | 0.76            | 68.19       | 2,099.9               | -2.0         | 2.9          | 381,684.46          | 570,045.99         | 32° 2' 56.990 N | 104° 6' 26.115 W |
| 2,200.0                                 | 0.93            | 69.09       | 2,199.9               | -1.5         | 4.3          | 381,685.00          | 570,047.36         | 32° 2' 56.995 N | 104° 6' 26.099 W |
| 2,300.0                                 | 0.72            | 68.88       | 2,299.9               | -1.0         | 5.6          | 381,685.51          | 570,048.71         | 32° 2' 57.001 N | 104° 6' 26.084 W |
| 2,340.0                                 | 0.65            | 49.36       | 2,339.9               | -0.7         | 6.0          | 381,685.75          | 570,049.12         | 32° 2' 57.003 N | 104° 6' 26.079 W |
| Tie In from Gyro @ 2340' MD / 2340' TVD |                 |             |                       |              |              |                     |                    |                 |                  |
| 2,466.0                                 | 0.30            | 89.90       | 2,465.9               | -0.3         | 6.9          | 381,686.22          | 570,049.99         | 32° 2' 57.007 N | 104° 6' 26.069 W |
| 2,655.0                                 | 0.30            | 295.30      | 2,654.9               | -0.1         | 6.9          | 381,686.43          | 570,050.03         | 32° 2' 57.010 N | 104° 6' 26.068 W |
| 2,844.0                                 | 0.10            | 262.90      | 2,843.9               | 0.1          | 6.3          | 381,686.62          | 570,049.42         | 32° 2' 57.011 N | 104° 6' 26.075 W |
| 3,033.0                                 | 0.30            | 225.50      | 3,032.9               | -0.2         | 5.8          | 381,686.25          | 570,048.91         | 32° 2' 57.008 N | 104° 6' 26.081 W |
| 3,222.0                                 | 0.50            | 234.60      | 3,221.9               | -1.1         | 4.8          | 381,685.43          | 570,047.88         | 32° 2' 57.000 N | 104° 6' 26.093 W |
| 3,410.0                                 | 0.60            | 227.40      | 3,409.9               | -2.2         | 3.4          | 381,684.29          | 570,046.49         | 32° 2' 56.988 N | 104° 6' 26.109 W |
| 3,600.0                                 | 0.70            | 240.10      | 3,599.9               | -3.5         | 1.6          | 381,683.04          | 570,044.75         | 32° 2' 56.976 N | 104° 6' 26.130 W |
| 3,789.0                                 | 0.70            | 237.40      | 3,788.8               | -4.7         | -0.3         | 381,681.84          | 570,042.78         | 32° 2' 56.964 N | 104° 6' 26.153 W |
| 3,978.0                                 | 0.90            | 242.50      | 3,977.8               | -6.0         | -2.6         | 381,680.53          | 570,040.49         | 32° 2' 56.951 N | 104° 6' 26.179 W |
| 4,168.0                                 | 1.10            | 237.80      | 4,167.8               | -7.6         | -5.5         | 381,678.87          | 570,037.62         | 32° 2' 56.935 N | 104° 6' 26.213 W |
| 4,357.0                                 | 1.00            | 232.70      | 4,356.8               | -9.6         | -8.3         | 381,676.90          | 570,034.77         | 32° 2' 56.916 N | 104° 6' 26.246 W |
| 4,546.0                                 | 0.90            | 233.40      | 4,545.7               | -11.5        | -10.8        | 381,675.02          | 570,032.27         | 32° 2' 56.897 N | 104° 6' 26.275 W |
| 4,735.0                                 | 1.20            | 235.70      | 4,734.7               | -13.5        | -13.7        | 381,673.02          | 570,029.44         | 32° 2' 56.877 N | 104° 6' 26.308 W |
| 4,924.0                                 | 0.90            | 265.40      | 4,923.7               | -14.7        | -16.8        | 381,671.79          | 570,026.33         | 32° 2' 56.865 N | 104° 6' 26.344 W |
| 5,114.0                                 | 0.70            | 299.60      | 5,113.7               | -14.3        | -19.3        | 381,672.24          | 570,023.83         | 32° 2' 56.870 N | 104° 6' 26.373 W |
| 5,302.0                                 | 1.60            | 11.20       | 5,301.6               | -11.1        | -19.8        | 381,675.38          | 570,023.34         | 32° 2' 56.901 N | 104° 6' 26.378 W |
| 5,492.0                                 | 1.60            | 26.30       | 5,491.6               | -6.1         | -18.1        | 381,680.36          | 570,025.03         | 32° 2' 56.950 N | 104° 6' 26.359 W |
| 5,681.0                                 | 1.20            | 43.40       | 5,680.5               | -2.3         | -15.5        | 381,684.16          | 570,027.56         | 32° 2' 56.988 N | 104° 6' 26.329 W |
| 5,870.0                                 | 1.10            | 75.90       | 5,869.5               | -0.5         | -12.4        | 381,686.04          | 570,030.68         | 32° 2' 57.006 N | 104° 6' 26.293 W |
| 6,059.0                                 | 0.40            | 48.30       | 6,058.4               | 0.4          | -10.2        | 381,686.93          | 570,032.93         | 32° 2' 57.015 N | 104° 6' 26.267 W |
| 6,248.0                                 | 0.30            | 86.80       | 6,247.4               | 0.9          | -9.2         | 381,687.39          | 570,033.92         | 32° 2' 57.019 N | 104° 6' 26.255 W |
| 6,437.0                                 | 0.60            | 237.60      | 6,436.4               | 0.4          | -9.5         | 381,686.89          | 570,033.58         | 32° 2' 57.014 N | 104° 6' 26.259 W |
| 6,627.0                                 | 1.10            | 259.00      | 6,626.4               | -0.5         | -12.2        | 381,686.01          | 570,030.95         | 32° 2' 57.006 N | 104° 6' 26.290 W |
| 6,815.0                                 | 1.30            | 275.60      | 6,814.4               | -0.6         | -16.0        | 381,685.87          | 570,027.06         | 32° 2' 57.005 N | 104° 6' 26.335 W |
| 7,005.0                                 | 0.70            | 284.50      | 7,004.4               | -0.1         | -19.3        | 381,686.37          | 570,023.79         | 32° 2' 57.010 N | 104° 6' 26.373 W |
| 7,194.0                                 | 0.30            | 87.30       | 7,193.3               | 0.2          | -19.9        | 381,686.69          | 570,023.16         | 32° 2' 57.013 N | 104° 6' 26.380 W |
| 7,384.0                                 | 0.30            | 186.10      | 7,383.3               | -0.3         | -19.5        | 381,686.21          | 570,023.61         | 32° 2' 57.008 N | 104° 6' 26.375 W |
| 7,431.0                                 | 1.20            | 218.60      | 7,430.3               | -0.8         | -19.8        | 381,685.71          | 570,023.29         | 32° 2' 57.003 N | 104° 6' 26.379 W |
| 7,462.0                                 | 3.30            | 193.50      | 7,461.3               | -1.9         | -20.2        | 381,684.59          | 570,022.88         | 32° 2' 56.992 N | 104° 6' 26.384 W |
| 7,494.0                                 | 5.40            | 183.80      | 7,493.2               | -4.3         | -20.5        | 381,682.19          | 570,022.56         | 32° 2' 56.968 N | 104° 6' 26.387 W |
| 7,525.0                                 | 8.60            | 178.70      | 7,524.0               | -8.1         | -20.6        | 381,678.41          | 570,022.52         | 32° 2' 56.931 N | 104° 6' 26.388 W |
| 7,557.0                                 | 11.00           | 177.50      | 7,555.5               | -13.5        | -20.4        | 381,672.97          | 570,022.71         | 32° 2' 56.877 N | 104° 6' 26.386 W |
| 7,589.0                                 | 13.70           | 177.60      | 7,586.8               | -20.4        | -20.1        | 381,666.13          | 570,023.00         | 32° 2' 56.809 N | 104° 6' 26.383 W |
| 7,620.0                                 | 16.40           | 179.10      | 7,616.7               | -28.4        | -19.9        | 381,658.09          | 570,023.22         | 32° 2' 56.730 N | 104° 6' 26.380 W |
| 7,652.0                                 | 20.00           | 181.20      | 7,647.1               | -38.4        | -19.9        | 381,648.10          | 570,023.18         | 32° 2' 56.631 N | 104° 6' 26.381 W |
| 7,683.0                                 | 23.60           | 182.40      | 7,675.9               | -49.9        | -20.3        | 381,636.59          | 570,022.80         | 32° 2' 56.517 N | 104° 6' 26.386 W |
| 7,715.0                                 | 27.50           | 184.50      | 7,704.7               | -63.7        | -21.1        | 381,622.82          | 570,021.96         | 32° 2' 56.381 N | 104° 6' 26.396 W |
| 7,746.0                                 | 30.20           | 182.80      | 7,731.9               | -78.6        | -22.1        | 381,607.90          | 570,021.01         | 32° 2' 56.233 N | 104° 6' 26.407 W |
| 7,778.0                                 | 33.00           | 184.90      | 7,759.2               | -95.3        | -23.2        | 381,591.17          | 570,019.88         | 32° 2' 56.067 N | 104° 6' 26.421 W |
| 7,810.0                                 | 36.70           | 179.90      | 7,785.4               | -113.6       | -24.0        | 381,572.92          | 570,019.15         | 32° 2' 55.887 N | 104° 6' 26.430 W |



DDC  
Survey Report - Geographic



|           |                          |                              |                                       |
|-----------|--------------------------|------------------------------|---------------------------------------|
| Company:  | COG Operating, LLC       | Local Co-ordinate Reference: | Well SRO State Unit #45H              |
| Project:  | Eddy County, NM (NAD 27) | TVD Reference:               | Well @ 3108.0usft (Scandrill Freedom) |
| Site:     | Sec 17, T26S, R28E       | MD Reference:                | Well @ 3108.0usft (Scandrill Freedom) |
| Well:     | SRO State Unit #45H      | North Reference:             | Grid                                  |
| Wellbore: | Wellbore #1              | Survey Calculation Method:   | Minimum Curvature                     |
| Design:   | Wellbore #1              | Database:                    | EDM 5000.1 Single User Db             |

| 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        |  |
| 7,841.0                                      | 39.70              | 176.80         | 7,809.8                     | -132.7          | -23.4           | 381,553.76                | 570,019.72               | 32° 2' 55.697 N | 104° 6' 26.424 W |  |
| 7,849.0                                      | 40.45              | 176.33         | 7,815.9                     | -137.9          | -23.1           | 381,548.62                | 570,020.03               | 32° 2' 55.646 N | 104° 6' 26.420 W |  |
| Crossed 330' HardLine @ 7849' MD / 7816' TVD |                    |                |                             |                 |                 |                           |                          |                 |                  |  |
| 7,873.0                                      | 42.70              | 175.00         | 7,833.8                     | -153.8          | -21.9           | 381,532.74                | 570,021.23               | 32° 2' 55.489 N | 104° 6' 26.406 W |  |
| 7,904.0                                      | 45.40              | 176.30         | 7,856.1                     | -175.2          | -20.2           | 381,511.25                | 570,022.86               | 32° 2' 55.276 N | 104° 6' 26.388 W |  |
| 7,936.0                                      | 49.40              | 177.80         | 7,877.8                     | -198.8          | -19.0           | 381,487.74                | 570,024.06               | 32° 2' 55.044 N | 104° 6' 26.375 W |  |
| 7,967.0                                      | 53.20              | 178.70         | 7,897.2                     | -222.9          | -18.3           | 381,463.56                | 570,024.80               | 32° 2' 54.804 N | 104° 6' 26.367 W |  |
| 7,999.0                                      | 58.30              | 180.10         | 7,915.2                     | -249.4          | -18.0           | 381,437.12                | 570,025.07               | 32° 2' 54.543 N | 104° 6' 26.364 W |  |
| 8,030.0                                      | 62.30              | 179.60         | 7,930.5                     | -276.3          | -18.0           | 381,410.20                | 570,025.14               | 32° 2' 54.276 N | 104° 6' 26.364 W |  |
| 8,062.0                                      | 65.10              | 180.30         | 7,944.7                     | -305.0          | -17.9           | 381,381.51                | 570,025.16               | 32° 2' 53.992 N | 104° 6' 26.365 W |  |
| 8,093.0                                      | 68.70              | 180.30         | 7,956.9                     | -333.5          | -18.1           | 381,353.00                | 570,025.01               | 32° 2' 53.710 N | 104° 6' 26.367 W |  |
| 8,125.0                                      | 71.80              | 180.50         | 7,967.7                     | -363.6          | -18.3           | 381,322.89                | 570,024.80               | 32° 2' 53.412 N | 104° 6' 26.370 W |  |
| 8,157.0                                      | 74.20              | 180.50         | 7,977.0                     | -394.2          | -18.6           | 381,292.29                | 570,024.53               | 32° 2' 53.109 N | 104° 6' 26.374 W |  |
| 8,188.0                                      | 76.40              | 178.50         | 7,984.9                     | -424.2          | -18.3           | 381,262.31                | 570,024.80               | 32° 2' 52.813 N | 104° 6' 26.372 W |  |
| 8,220.0                                      | 79.50              | 178.40         | 7,991.6                     | -455.5          | -17.5           | 381,231.03                | 570,025.64               | 32° 2' 52.503 N | 104° 6' 26.363 W |  |
| 8,252.0                                      | 82.50              | 177.30         | 7,996.6                     | -487.0          | -16.3           | 381,199.45                | 570,026.83               | 32° 2' 52.191 N | 104° 6' 26.350 W |  |
| 8,283.0                                      | 85.90              | 177.50         | 7,999.7                     | -517.9          | -14.9           | 381,168.65                | 570,028.23               | 32° 2' 51.886 N | 104° 6' 26.334 W |  |
| 8,315.0                                      | 86.80              | 177.10         | 8,001.8                     | -549.8          | -13.4           | 381,136.75                | 570,029.73               | 32° 2' 51.570 N | 104° 6' 26.317 W |  |
| 8,352.0                                      | 89.30              | 178.00         | 8,003.0                     | -586.7          | -11.8           | 381,099.81                | 570,031.32               | 32° 2' 51.204 N | 104° 6' 26.300 W |  |
| 8,383.0                                      | 90.00              | 178.10         | 8,003.2                     | -617.7          | -10.7           | 381,068.82                | 570,032.37               | 32° 2' 50.898 N | 104° 6' 26.288 W |  |
| 8,478.0                                      | 91.10              | 178.00         | 8,002.3                     | -712.6          | -7.5            | 380,973.89                | 570,035.60               | 32° 2' 49.958 N | 104° 6' 26.253 W |  |
| 8,572.0                                      | 92.20              | 177.80         | 7,999.6                     | -806.5          | -4.1            | 380,879.99                | 570,039.05               | 32° 2' 49.029 N | 104° 6' 26.215 W |  |
| 8,667.0                                      | 91.70              | 177.80         | 7,996.3                     | -901.4          | -0.4            | 380,785.11                | 570,042.69               | 32° 2' 48.090 N | 104° 6' 26.175 W |  |
| 8,762.0                                      | 90.40              | 178.70         | 7,994.6                     | -996.3          | 2.5             | 380,690.18                | 570,045.59               | 32° 2' 47.150 N | 104° 6' 26.144 W |  |
| 8,856.0                                      | 89.60              | 179.20         | 7,994.6                     | -1,090.3        | 4.2             | 380,596.19                | 570,047.31               | 32° 2' 46.220 N | 104° 6' 26.126 W |  |
| 8,951.0                                      | 89.10              | 179.20         | 7,995.7                     | -1,185.3        | 5.5             | 380,501.21                | 570,048.64               | 32° 2' 45.280 N | 104° 6' 26.113 W |  |
| 9,046.0                                      | 90.60              | 179.90         | 7,995.9                     | -1,280.3        | 6.3             | 380,406.22                | 570,049.39               | 32° 2' 44.340 N | 104° 6' 26.107 W |  |
| 9,140.0                                      | 89.60              | 179.40         | 7,995.8                     | -1,374.3        | 6.9             | 380,312.22                | 570,049.96               | 32° 2' 43.410 N | 104° 6' 26.102 W |  |
| 9,235.0                                      | 90.30              | 179.10         | 7,995.9                     | -1,469.3        | 8.1             | 380,217.23                | 570,051.20               | 32° 2' 42.469 N | 104° 6' 26.090 W |  |
| 9,330.0                                      | 90.10              | 180.50         | 7,995.5                     | -1,564.3        | 8.4             | 380,122.23                | 570,051.53               | 32° 2' 41.529 N | 104° 6' 26.089 W |  |
| 9,424.0                                      | 91.10              | 180.10         | 7,994.5                     | -1,658.3        | 7.9             | 380,028.24                | 570,051.04               | 32° 2' 40.599 N | 104° 6' 26.097 W |  |
| 9,519.0                                      | 90.10              | 180.50         | 7,993.5                     | -1,753.3        | 7.4             | 379,933.25                | 570,050.55               | 32° 2' 39.659 N | 104° 6' 26.105 W |  |
| 9,614.0                                      | 89.30              | 180.80         | 7,994.0                     | -1,848.2        | 6.4             | 379,838.26                | 570,049.47               | 32° 2' 38.719 N | 104° 6' 26.120 W |  |
| 9,708.0                                      | 90.80              | 183.30         | 7,994.0                     | -1,942.2        | 3.0             | 379,744.33                | 570,046.11               | 32° 2' 37.789 N | 104° 6' 26.161 W |  |
| 9,803.0                                      | 90.70              | 182.20         | 7,992.7                     | -2,037.1        | -1.6            | 379,649.45                | 570,041.55               | 32° 2' 36.851 N | 104° 6' 26.216 W |  |
| 9,898.0                                      | 89.70              | 181.30         | 7,992.4                     | -2,132.0        | -4.5            | 379,554.49                | 570,038.65               | 32° 2' 35.911 N | 104° 6' 26.252 W |  |
| 9,993.0                                      | 89.10              | 180.50         | 7,993.4                     | -2,227.0        | -5.9            | 379,459.51                | 570,037.15               | 32° 2' 34.971 N | 104° 6' 26.272 W |  |
| 10,087.0                                     | 89.10              | 179.90         | 7,994.9                     | -2,321.0        | -6.3            | 379,365.52                | 570,036.83               | 32° 2' 34.041 N | 104° 6' 26.278 W |  |
| 10,182.0                                     | 90.00              | 179.20         | 7,995.6                     | -2,416.0        | -5.5            | 379,270.53                | 570,037.57               | 32° 2' 33.101 N | 104° 6' 26.272 W |  |
| 10,276.0                                     | 89.50              | 178.90         | 7,996.0                     | -2,510.0        | -4.0            | 379,176.55                | 570,039.13               | 32° 2' 32.170 N | 104° 6' 26.256 W |  |
| 10,371.0                                     | 90.70              | 179.10         | 7,995.8                     | -2,604.9        | -2.3            | 379,081.56                | 570,040.79               | 32° 2' 31.230 N | 104° 6' 26.239 W |  |
| 10,465.0                                     | 89.70              | 178.70         | 7,995.5                     | -2,698.9        | -0.5            | 378,987.58                | 570,042.59               | 32° 2' 30.300 N | 104° 6' 26.220 W |  |
| 10,560.0                                     | 90.40              | 178.00         | 7,995.4                     | -2,793.9        | 2.2             | 378,892.62                | 570,045.33               | 32° 2' 29.360 N | 104° 6' 26.191 W |  |
| 10,655.0                                     | 91.10              | 178.20         | 7,994.2                     | -2,888.8        | 5.4             | 378,797.68                | 570,048.48               | 32° 2' 28.421 N | 104° 6' 26.156 W |  |
| 10,748.0                                     | 91.30              | 179.10         | 7,992.2                     | -2,981.8        | 7.6             | 378,704.73                | 570,050.67               | 32° 2' 27.501 N | 104° 6' 26.133 W |  |
| 10,843.0                                     | 90.20              | 178.00         | 7,991.0                     | -3,076.7        | 10.0            | 378,609.77                | 570,053.07               | 32° 2' 26.561 N | 104° 6' 26.108 W |  |
| 10,937.0                                     | 89.60              | 179.60         | 7,991.2                     | -3,170.7        | 11.9            | 378,515.80                | 570,055.04               | 32° 2' 25.631 N | 104° 6' 26.087 W |  |
| 11,032.0                                     | 90.40              | 180.10         | 7,991.2                     | -3,265.7        | 12.2            | 378,420.80                | 570,055.29               | 32° 2' 24.691 N | 104° 6' 26.086 W |  |
| 11,126.0                                     | 91.10              | 179.10         | 7,989.9                     | -3,359.7        | 12.8            | 378,326.81                | 570,055.95               | 32° 2' 23.761 N | 104° 6' 26.081 W |  |
| 11,221.0                                     | 90.90              | 179.80         | 7,988.3                     | -3,454.7        | 13.8            | 378,231.83                | 570,056.86               | 32° 2' 22.821 N | 104° 6' 26.073 W |  |
| 11,315.0                                     | 90.00              | 180.30         | 7,987.5                     | -3,548.7        | 13.7            | 378,137.83                | 570,056.78               | 32° 2' 21.890 N | 104° 6' 26.076 W |  |
| 11,409.0                                     | 90.80              | 180.80         | 7,986.9                     | -3,642.7        | 12.8            | 378,043.84                | 570,055.87               | 32° 2' 20.960 N | 104° 6' 26.089 W |  |
| 11,504.0                                     | 91.00              | 181.30         | 7,985.4                     | -3,737.6        | 11.0            | 377,948.87                | 570,054.13               | 32° 2' 20.020 N | 104° 6' 26.111 W |  |
| 11,598.0                                     | 89.70              | 178.40         | 7,984.8                     | -3,831.6        | 11.3            | 377,854.88                | 570,054.38               | 32° 2' 19.090 N | 104° 6' 26.111 W |  |
| 11,692.0                                     | 90.30              | 177.60         | 7,984.8                     | -3,925.6        | 14.6            | 377,760.94                | 570,057.66               | 32° 2' 18.160 N | 104° 6' 26.075 W |  |



DDC  
Survey Report - Geographic



|           |                          |                              |                                       |
|-----------|--------------------------|------------------------------|---------------------------------------|
| Company:  | COG Operating, LLC       | Local Co-ordinate Reference: | Well SRO State Unit #45H              |
| Project:  | Eddy County, NM (NAD 27) | TVD Reference:               | Well @ 3108.0usft (Scandrell Freedom) |
| Site:     | Sec 17, T26S, R28E       | MD Reference:                | Well @ 3108.0usft (Scandrell Freedom) |
| Well:     | SRO State Unit #45H      | North Reference:             | Grid                                  |
| Wellbore: | Wellbore #1              | Survey Calculation Method:   | Minimum Curvature                     |
| Design:   | Wellbore #1              | Database:                    | EDM 5000.1 Single User Db             |

Survey

| Measured Depth (usft)                       | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude        | Longitude        |
|---------------------------------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-----------------|------------------|
| 11,786.0                                    | 89.60           | 179.90      | 7,984.9               | -4,019.5     | 16.6         | 377,666.97          | 570,059.71         | 32° 2' 17.230 N | 104° 6' 26.053 W |
| 11,880.0                                    | 90.60           | 179.60      | 7,984.7               | -4,113.5     | 17.0         | 377,572.97          | 570,060.12         | 32° 2' 16.300 N | 104° 6' 26.051 W |
| 11,974.0                                    | 89.40           | 178.70      | 7,984.7               | -4,207.5     | 18.4         | 377,478.99          | 570,061.51         | 32° 2' 15.370 N | 104° 6' 26.037 W |
| 12,069.0                                    | 90.00           | 178.50      | 7,985.2               | -4,302.5     | 20.7         | 377,384.02          | 570,063.84         | 32° 2' 14.430 N | 104° 6' 26.012 W |
| 12,163.0                                    | 91.00           | 178.20      | 7,984.4               | -4,396.4     | 23.4         | 377,290.06          | 570,066.54         | 32° 2' 13.500 N | 104° 6' 25.983 W |
| 12,257.0                                    | 90.00           | 179.10      | 7,983.6               | -4,490.4     | 25.7         | 377,196.09          | 570,068.76         | 32° 2' 12.570 N | 104° 6' 25.960 W |
| 12,352.0                                    | 90.90           | 178.90      | 7,982.8               | -4,585.4     | 27.3         | 377,101.11          | 570,070.41         | 32° 2' 11.630 N | 104° 6' 25.943 W |
| 12,446.0                                    | 90.50           | 179.20      | 7,981.7               | -4,679.4     | 28.9         | 377,007.13          | 570,071.97         | 32° 2' 10.700 N | 104° 6' 25.927 W |
| 12,540.0                                    | 90.00           | 179.90      | 7,981.3               | -4,773.4     | 29.6         | 376,913.13          | 570,072.71         | 32° 2' 9.770 N  | 104° 6' 25.921 W |
| 12,634.0                                    | 90.90           | 180.30      | 7,980.5               | -4,867.4     | 29.4         | 376,819.14          | 570,072.55         | 32° 2' 8.839 N  | 104° 6' 25.925 W |
| 12,728.0                                    | 90.00           | 179.60      | 7,979.8               | -4,961.4     | 29.5         | 376,725.14          | 570,072.63         | 32° 2' 7.909 N  | 104° 6' 25.926 W |
| 12,822.0                                    | 90.80           | 178.90      | 7,979.1               | -5,055.3     | 30.8         | 376,631.16          | 570,073.86         | 32° 2' 6.979 N  | 104° 6' 25.914 W |
| 12,860.7                                    | 90.18           | 179.02      | 7,978.8               | -5,094.0     | 31.5         | 376,592.46          | 570,074.56         | 32° 2' 6.596 N  | 104° 6' 25.907 W |
| Crossed SectionLine @ 12861' MD / 7979' TVD |                 |             |                       |              |              |                     |                    |                 |                  |
| 12,916.0                                    | 89.30           | 179.20      | 7,979.1               | -5,149.3     | 32.3         | 376,537.17          | 570,075.42         | 32° 2' 6.049 N  | 104° 6' 25.898 W |
| 13,011.0                                    | 89.00           | 179.80      | 7,980.5               | -5,244.3     | 33.1         | 376,442.19          | 570,076.25         | 32° 2' 5.109 N  | 104° 6' 25.891 W |
| 13,105.0                                    | 89.70           | 179.90      | 7,981.5               | -5,338.3     | 33.4         | 376,348.19          | 570,076.49         | 32° 2' 4.179 N  | 104° 6' 25.891 W |
| 13,199.0                                    | 90.60           | 179.40      | 7,981.3               | -5,432.3     | 34.0         | 376,254.20          | 570,077.07         | 32° 2' 3.248 N  | 104° 6' 25.886 W |
| 13,293.0                                    | 91.30           | 180.30      | 7,979.7               | -5,526.3     | 34.2         | 376,160.21          | 570,077.31         | 32° 2' 2.318 N  | 104° 6' 25.886 W |
| 13,387.0                                    | 92.20           | 180.30      | 7,976.9               | -5,620.2     | 33.7         | 376,066.26          | 570,076.82         | 32° 2' 1.388 N  | 104° 6' 25.894 W |
| 13,481.0                                    | 91.40           | 180.30      | 7,973.9               | -5,714.2     | 33.2         | 375,972.31          | 570,076.33         | 32° 2' 0.459 N  | 104° 6' 25.902 W |
| 13,575.0                                    | 90.30           | 180.60      | 7,972.5               | -5,808.2     | 32.5         | 375,878.32          | 570,075.59         | 32° 1' 59.529 N | 104° 6' 25.912 W |
| 13,669.0                                    | 91.20           | 179.80      | 7,971.3               | -5,902.2     | 32.2         | 375,784.33          | 570,075.26         | 32° 1' 58.598 N | 104° 6' 25.919 W |
| 13,763.0                                    | 90.20           | 180.10      | 7,970.1               | -5,996.2     | 32.2         | 375,690.34          | 570,075.34         | 32° 1' 57.668 N | 104° 6' 25.920 W |
| 13,857.0                                    | 91.00           | 180.30      | 7,969.2               | -6,090.2     | 31.9         | 375,596.35          | 570,075.02         | 32° 1' 56.738 N | 104° 6' 25.926 W |
| 13,951.0                                    | 90.20           | 179.40      | 7,968.2               | -6,184.1     | 32.2         | 375,502.35          | 570,075.26         | 32° 1' 55.808 N | 104° 6' 25.925 W |
| 14,045.0                                    | 91.30           | 179.80      | 7,966.9               | -6,278.1     | 32.8         | 375,408.36          | 570,075.92         | 32° 1' 54.878 N | 104° 6' 25.920 W |
| 14,139.0                                    | 90.30           | 180.50      | 7,965.6               | -6,372.1     | 32.6         | 375,314.38          | 570,075.67         | 32° 1' 53.947 N | 104° 6' 25.925 W |
| 14,233.0                                    | 91.20           | 180.50      | 7,964.4               | -6,466.1     | 31.8         | 375,220.39          | 570,074.85         | 32° 1' 53.017 N | 104° 6' 25.937 W |
| 14,327.0                                    | 89.90           | 179.40      | 7,963.5               | -6,560.1     | 31.8         | 375,126.40          | 570,074.94         | 32° 1' 52.087 N | 104° 6' 25.938 W |
| 14,421.0                                    | 90.70           | 179.80      | 7,963.0               | -6,654.1     | 32.5         | 375,032.40          | 570,075.59         | 32° 1' 51.157 N | 104° 6' 25.933 W |
| 14,515.0                                    | 90.30           | 179.90      | 7,962.2               | -6,748.1     | 32.7         | 374,938.40          | 570,075.84         | 32° 1' 50.227 N | 104° 6' 25.932 W |
| 14,609.0                                    | 90.80           | 179.60      | 7,961.3               | -6,842.1     | 33.1         | 374,844.41          | 570,076.25         | 32° 1' 49.296 N | 104° 6' 25.930 W |
| 14,704.0                                    | 90.30           | 179.80      | 7,960.4               | -6,937.1     | 33.6         | 374,749.42          | 570,076.74         | 32° 1' 48.356 N | 104° 6' 25.926 W |
| 14,798.0                                    | 88.90           | 180.30      | 7,961.0               | -7,031.1     | 33.6         | 374,655.42          | 570,076.66         | 32° 1' 47.426 N | 104° 6' 25.930 W |
| 14,892.0                                    | 89.30           | 179.20      | 7,962.5               | -7,125.1     | 34.0         | 374,561.44          | 570,077.07         | 32° 1' 46.496 N | 104° 6' 25.927 W |
| 14,986.0                                    | 89.90           | 179.40      | 7,963.2               | -7,219.1     | 35.1         | 374,467.45          | 570,078.22         | 32° 1' 45.566 N | 104° 6' 25.916 W |
| 15,081.0                                    | 89.30           | 179.60      | 7,963.8               | -7,314.0     | 35.9         | 374,372.45          | 570,079.05         | 32° 1' 44.625 N | 104° 6' 25.909 W |
| 15,174.0                                    | 90.00           | 179.10      | 7,964.4               | -7,407.0     | 37.0         | 374,279.46          | 570,080.11         | 32° 1' 43.705 N | 104° 6' 25.899 W |
| 15,269.0                                    | 90.60           | 179.20      | 7,963.9               | -7,502.0     | 38.4         | 374,184.47          | 570,081.51         | 32° 1' 42.765 N | 104° 6' 25.885 W |
| 15,363.0                                    | 91.30           | 179.20      | 7,962.3               | -7,596.0     | 39.7         | 374,090.50          | 570,082.83         | 32° 1' 41.835 N | 104° 6' 25.872 W |
| 15,457.0                                    | 91.10           | 179.10      | 7,960.4               | -7,690.0     | 41.1         | 373,996.53          | 570,084.22         | 32° 1' 40.905 N | 104° 6' 25.858 W |
| 15,551.0                                    | 90.60           | 180.10      | 7,959.0               | -7,784.0     | 41.8         | 373,902.54          | 570,084.88         | 32° 1' 39.975 N | 104° 6' 25.853 W |
| 15,645.0                                    | 90.00           | 180.80      | 7,958.5               | -7,878.0     | 41.0         | 373,808.55          | 570,084.14         | 32° 1' 39.045 N | 104° 6' 25.863 W |
| 15,739.0                                    | 90.20           | 180.50      | 7,958.3               | -7,971.9     | 40.0         | 373,714.55          | 570,083.07         | 32° 1' 38.114 N | 104° 6' 25.878 W |
| 15,833.0                                    | 90.70           | 180.60      | 7,957.6               | -8,065.9     | 39.1         | 373,620.56          | 570,082.17         | 32° 1' 37.184 N | 104° 6' 25.891 W |
| 15,927.0                                    | 91.40           | 179.80      | 7,955.9               | -8,159.9     | 38.7         | 373,526.58          | 570,081.84         | 32° 1' 36.254 N | 104° 6' 25.897 W |
| 16,021.0                                    | 90.50           | 180.30      | 7,954.3               | -8,253.9     | 38.7         | 373,432.59          | 570,081.76         | 32° 1' 35.324 N | 104° 6' 25.900 W |
| 16,115.0                                    | 89.60           | 181.70      | 7,954.2               | -8,347.9     | 37.0         | 373,338.61          | 570,080.12         | 32° 1' 34.394 N | 104° 6' 25.922 W |
| 16,209.0                                    | 90.30           | 181.50      | 7,954.3               | -8,441.9     | 34.4         | 373,244.65          | 570,077.49         | 32° 1' 33.464 N | 104° 6' 25.954 W |
| 16,303.0                                    | 90.70           | 180.80      | 7,953.5               | -8,535.8     | 32.5         | 373,150.67          | 570,075.61         | 32° 1' 32.534 N | 104° 6' 25.979 W |
| 16,398.0                                    | 91.20           | 180.50      | 7,951.9               | -8,630.8     | 31.4         | 373,055.69          | 570,074.53         | 32° 1' 31.594 N | 104° 6' 25.993 W |
| 16,492.0                                    | 90.00           | 180.30      | 7,950.9               | -8,724.8     | 30.8         | 372,961.70          | 570,073.87         | 32° 1' 30.664 N | 104° 6' 26.003 W |
| 16,586.0                                    | 90.80           | 179.90      | 7,950.3               | -8,818.8     | 30.6         | 372,867.70          | 570,073.71         | 32° 1' 29.734 N | 104° 6' 26.007 W |
| 16,680.0                                    | 90.00           | 180.30      | 7,949.6               | -8,912.8     | 30.4         | 372,773.71          | 570,073.55         | 32° 1' 28.803 N | 104° 6' 26.012 W |



DDC  
Survey Report - Geographic



|           |                          |                              |                                      |
|-----------|--------------------------|------------------------------|--------------------------------------|
| Company:  | COG Operating, LLC       | Local Co-ordinate Reference: | Well SRO State Unit #45H             |
| Project:  | Eddy County, NM (NAD 27) | TVD Reference:               | Well @ 3108.0usft (Scandril Freedom) |
| Site:     | Sec 17, T26S, R28E       | MD Reference:                | Well @ 3108.0usft (Scandril Freedom) |
| Well:     | SRO State Unit #45H      | North Reference:             | Grid                                 |
| Wellbore: | Wellbore #1              | Survey Calculation Method:   | Minimum Curvature                    |
| Design:   | Wellbore #1              | Database:                    | EDM 5000.1 Single User Db            |

| Survey                     |                 |             |                       |              |              |                     |                    |                 |                  |
|----------------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-----------------|------------------|
| Measured Depth (usft)      | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude        | Longitude        |
| 16,775.0                   | 90.30           | 179.90      | 7,949.4               | -9,007.8     | 30.3         | 372,678.71          | 570,073.38         | 32° 1' 27.863 N | 104° 6' 26.016 W |
| 16,869.0                   | 90.80           | 179.90      | 7,948.5               | -9,101.8     | 30.4         | 372,584.71          | 570,073.54         | 32° 1' 26.933 N | 104° 6' 26.016 W |
| 16,963.0                   | 90.00           | 179.80      | 7,947.8               | -9,195.8     | 30.7         | 372,490.71          | 570,073.79         | 32° 1' 26.003 N | 104° 6' 26.016 W |
| 17,057.0                   | 90.20           | 179.60      | 7,947.6               | -9,289.8     | 31.2         | 372,396.72          | 570,074.28         | 32° 1' 25.072 N | 104° 6' 26.012 W |
| 17,152.0                   | 90.50           | 179.40      | 7,947.1               | -9,384.8     | 32.0         | 372,301.72          | 570,075.11         | 32° 1' 24.132 N | 104° 6' 26.005 W |
| 17,245.0                   | 91.00           | 179.20      | 7,945.8               | -9,477.8     | 33.1         | 372,208.74          | 570,076.25         | 32° 1' 23.212 N | 104° 6' 25.994 W |
| 17,340.0                   | 90.20           | 179.20      | 7,944.8               | -9,572.7     | 34.5         | 372,113.75          | 570,077.57         | 32° 1' 22.272 N | 104° 6' 25.981 W |
| 17,434.0                   | 90.50           | 179.10      | 7,944.3               | -9,666.7     | 35.9         | 372,019.76          | 570,078.97         | 32° 1' 21.342 N | 104° 6' 25.967 W |
| 17,528.0                   | 90.80           | 178.90      | 7,943.2               | -9,760.7     | 37.5         | 371,925.78          | 570,080.61         | 32° 1' 20.412 N | 104° 6' 25.950 W |
| 17,622.0                   | 90.00           | 179.80      | 7,942.5               | -9,854.7     | 38.6         | 371,831.79          | 570,081.68         | 32° 1' 19.481 N | 104° 6' 25.940 W |
| 17,727.0                   | 90.10           | 179.20      | 7,942.5               | -9,959.7     | 39.5         | 371,726.80          | 570,082.59         | 32° 1' 18.442 N | 104° 6' 25.932 W |
| 17,774.0                   | 90.10           | 179.20      | 7,942.4               | -10,006.7    | 40.1         | 371,679.80          | 570,083.25         | 32° 1' 17.977 N | 104° 6' 25.926 W |
| TD @ 17774' MD / 7942' TVD |                 |             |                       |              |              |                     |                    |                 |                  |

| Design Annotations    |                       |                   |              |                                              |
|-----------------------|-----------------------|-------------------|--------------|----------------------------------------------|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |              | Comment                                      |
|                       |                       | +N/-S (usft)      | +E/-W (usft) |                                              |
| 2,340.0               | 2,339.9               | -0.7              | 6.0          | Tie In from Gyro @ 2340' MD / 2340' TVD      |
| 7,849.0               | 7,815.9               | -137.9            | -23.1        | Crossed 330' HardLine @ 7849' MD / 7816' TVD |
| 12,860.7              | 7,978.8               | -5,094.0          | 31.5         | Crossed SectionLine @ 12861' MD / 7979' TVD  |
| 17,774.0              | 7,942.4               | -10,006.7         | 40.1         | TD @ 17774' MD / 7942' TVD                   |

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