



December 30, 2014

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

38.015. 406.02

Attn: Kanicia Castillo

RE: Dodd Federal Unit 620

Please find enclosed a copy of the survey from 0.00' to 860.00' ran on the above referenced well.

If I can be of any further service, please do not hesitate to call me at 800-606-4976.

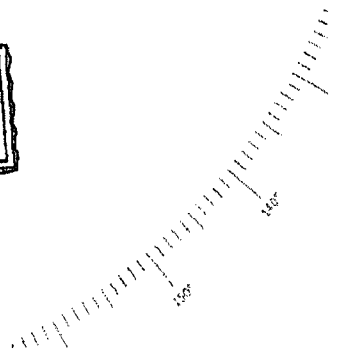
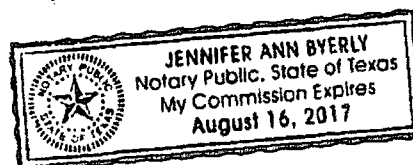
Sincerely,

Keith Havelka  
Operations

STATE OF TEXAS §  
§  
COUNTY OF NUECES §

This instrument was acknowledged before me on the 30 day of December A.D., 2014, by Keith Havelka.

Jennifer Ann Byerly  
Notary Public, State of Texas





Company: COG Operating  
Lease/Well: Dodd Federal Unit 620  
Location: Sec 15 T17S R29E  
Rig Name: Basic 38  
State/County: New Mexico/Eddy  
Latitude: 32.83, Longitude: -104.06  
GRID North is 0.15 Degrees East of True North  
VS-Azi: 0.00 Degrees



Depth Reference : RKB = 13 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

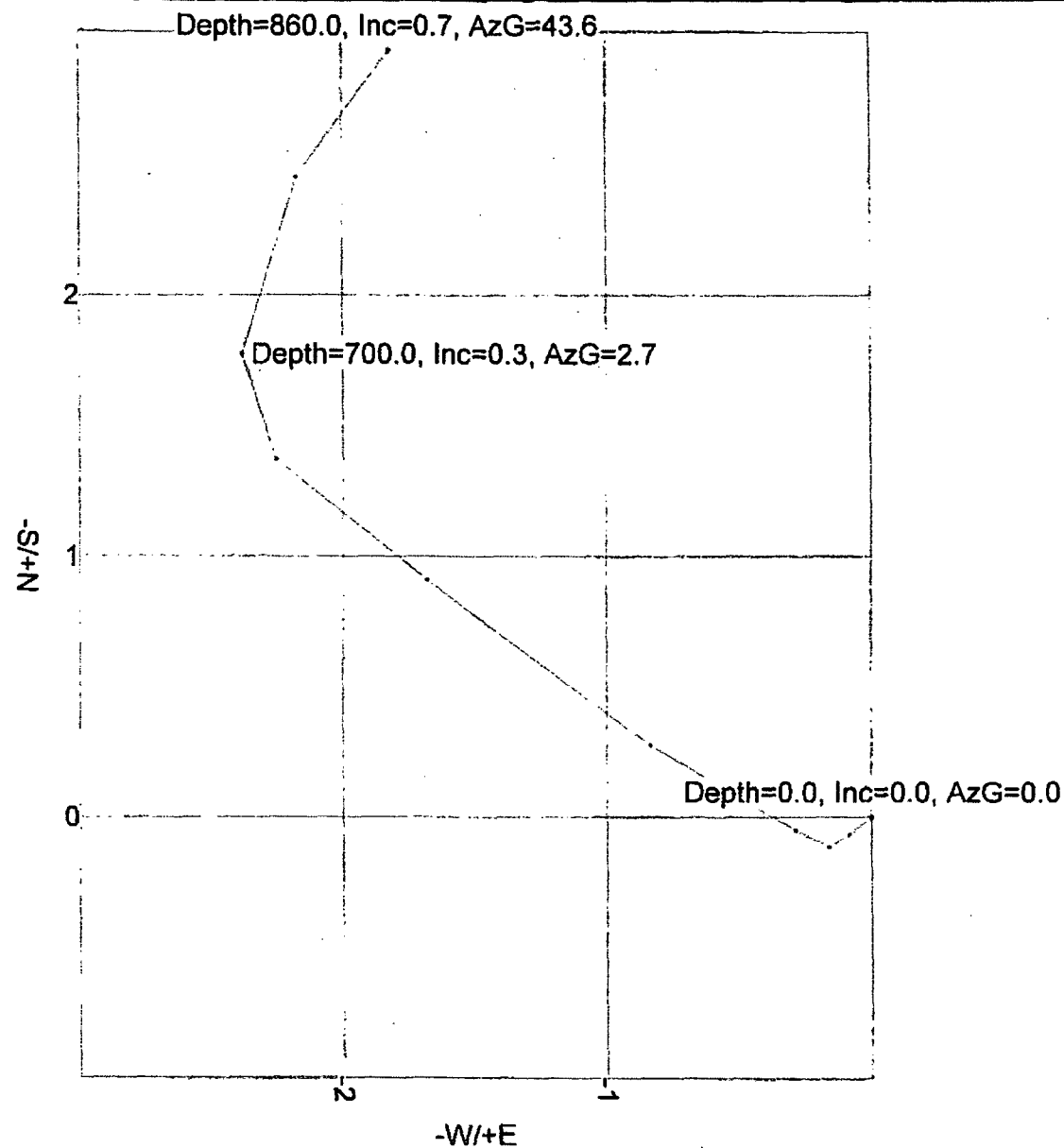
Filename: gyro survey.ut  
Minimum Curvature Method  
Report Date/Time: 12/30/2014 / 14:15

VES Survey International  
West Texas  
(432) 563-5444  
Surveyor: Noe Garza  
Dodd Federal Unit 620 / API 30-015-40602

| 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                  | 0.12                 | 232.50                    | 100.00    | -0.07       | -0.09       | -0.07                     | 0.11                      | 232.50                      | 0.12                          |
| 200.00                  | 0.02                 | 30.34                     | 200.00    | -0.11       | -0.16       | -0.11                     | 0.19                      | 234.85                      | 0.15                          |
| 300.00                  | 0.17                 | 287.48                    | 300.00    | -0.06       | -0.29       | -0.05                     | 0.29                      | 260.04                      | 0.17                          |
| 400.00                  | 0.57                 | 304.83                    | 400.00    | 0.28        | -0.83       | 0.28                      | 0.88                      | 288.43                      | 0.42                          |
| 500.00                  | 0.64                 | 308.57                    | 499.99    | 0.91        | -1.68       | 0.91                      | 1.91                      | 298.44                      | 0.07                          |
| 600.00                  | 0.21                 | 309.71                    | 599.99    | 1.37        | -2.26       | 1.37                      | 2.64                      | 301.34                      | 0.43                          |
| 700.00                  | 0.33                 | 2.70                      | 699.99    | 1.77        | -2.38       | 1.77                      | 2.97                      | 306.71                      | 0.26                          |
| 800.00                  | 0.50                 | 26.50                     | 799.99    | 2.45        | -2.17       | 2.46                      | 3.27                      | 318.41                      | 0.24                          |
| 860.00                  | 0.65                 | 43.64                     | 859.98    | 2.93        | -1.82       | 2.93                      | 3.45                      | 328.12                      | 0.38                          |



VES Survey International  
West Texas  
(432) 563-5444  
Surveyor: Noe Garza  
Dodd Federal Unit 620 / API 30-015-40602



VES Survey Date: 12/10/2014

OPERATOR COG Operating  
WELL/LEASE Dodd Federal Unit #620  
COUNTY Eddy Co., NM.

STATE OF NEW MEXICO  
DEVIATION REPORT

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|      |      |
|------|------|
| 115  | 0.47 |
| 230  | 0.45 |
| 566  | 0.68 |
| 885  | 1.40 |
| 990  | 0.80 |
| 1053 | 1.50 |
| 1180 | 3.90 |
| 1307 | 5.90 |
| 1433 | 5.60 |
| 1623 | 5.60 |
| 1813 | 5.80 |
| 2003 | 6.20 |
| 2192 | 5.80 |
| 2382 | 6.80 |
| 2572 | 6.40 |
| 2762 | 7.00 |
| 2952 | 7.10 |
| 3142 | 5.70 |
| 3331 | 5.80 |
| 3521 | 5.80 |
| 3648 | 5.80 |
| 3901 | 6.60 |
| 4027 | 6.40 |
| 4154 | 6.50 |
| 4280 | 5.80 |
| 4507 | 5.60 |

SIGNED BY: *Ron Scandolari*

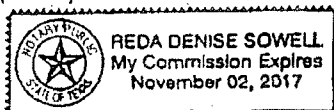
RON SCANDOLARI, VP-CONTRACT DRILLING

STATE OF TEXAS

COUNTY OF MIDLAND

ON THIS 19 DAY OF December, 2014, BEFORE ME, R SOWELL, A NOTARY PUBLIC, PERSONALLY APPEARED RON SCANDOLARI, WHO ACKNOWLEDGED AND EXECUTED THIS DOCUMENT. WITNESS MY HAND AND OFFICIAL SEAL.

(SEAL)



*Reda Denise Sowell*  
NOTARY PUBLIC



## **COG Operating LLC**

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

**Dodd Federal Unit**

**#620**

**WB1 / Job #1412457**

**Design: Surveys (Basic 38)**

## **Standard Survey Report**

**13 December, 2014**



**PHOENIX**  
**TECHNOLOGY SERVICES**



Phoenix  
Survey Report



|           |                             |                              |                             |
|-----------|-----------------------------|------------------------------|-----------------------------|
| Company:  | COG Operating LLC           | Local Co-ordinate Reference: | Well #820                   |
| Project:  | Eddy County, NM (NAD27 NME) | TVD Reference:               | KB @ 3606.00usft (Basic 38) |
| Site:     | Dodd Federal Unit           | MD Reference:                | KB @ 3606.00usft (Basic 38) |
| Well:     | #820                        | North Reference:             | Grid                        |
| Wellbore: | WB1 / Job #1412457          | Survey Calculation Method:   | Minimum Curvature           |
| Design:   | Surveys (Basic 38)          | Database:                    | Compass 5000 GCR            |

|             |                                      |               |                |
|-------------|--------------------------------------|---------------|----------------|
| Project:    | Eddy County, NM (NAD27 NME)          |               |                |
| 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:                 | Dodd Federal Unit |                   |                    |
| Site Position:        |                   | Northing:         | 569,009.70 usft    |
| From:                 | Map               | Easting:          | 585,704.90 usft    |
| Position Uncertainty: | 0.00 usft         | Slot Radius:      | 13-3/16 "          |
|                       |                   | Latitude:         | 32° 50' 19.97600 N |
|                       |                   | Longitude:        | 104° 3' 15.44871 W |
|                       |                   | Grid Convergence: | 0.15 °             |

|                      |           |                     |                    |
|----------------------|-----------|---------------------|--------------------|
| Well:                | #820      |                     |                    |
| Well Position        | +N-S      | 0.00 usft           | Northing:          |
|                      | +E-W      | 0.00 usft           | Easting:           |
| Position Uncertainty | 0.00 usft | Wellhead Elevation: | usft               |
|                      |           | Latitude:           | 32° 49' 53.76430 N |
|                      |           | Longitude:          | 104° 3' 20.84456 W |
|                      |           | Ground Level:       | 3,594.00 usft      |

|           |                    |             |                |
|-----------|--------------------|-------------|----------------|
| Wellbore: | WB1 / Job #1412457 |             |                |
| Magnetico | Model Name         | Sample Date | Declination    |
|           | IGRF2010_14        | 12/10/2014  | 7.43           |
|           |                    |             | Dip Angle      |
|           |                    |             | 60.58          |
|           |                    |             | Field Strength |
|           |                    |             | 48,578         |

|                   |                    |               |        |
|-------------------|--------------------|---------------|--------|
| Design:           | Surveys (Basic 38) |               |        |
| Audit Notes:      |                    |               |        |
| Version:          | 1.0                | Phase:        | ACTUAL |
|                   |                    | Tie On Depth: | 0.00   |
| Vertical Section: | Depth From (TVD)   | +N-S          | +E-W   |
|                   | (usft)             | (usft)        | (usft) |
|                   | 0.00               | 0.00          | 0.00   |
|                   |                    |               | 97.87  |

|                |                 |                                      |                                      |
|----------------|-----------------|--------------------------------------|--------------------------------------|
| Survey Program | Date 12/13/2014 |                                      |                                      |
| From           | To              | Survey (Wellbore)                    | Tool Name                            |
| (usft)         | (usft)          |                                      |                                      |
| 100.00         | 860.00          | VES Gyro Survey (WB1 / Job #1412457) | NS-GYRO-MS                           |
| 860.00         | 4,555.00        | Phoenix MWD Survey (WB1 / Job #14124 | PHX+MWD+IGRF                         |
|                |                 |                                      | Description                          |
|                |                 |                                      | North sensing gyrocompassing m/s     |
|                |                 |                                      | PHX+MWD+IGRF v3:standard declination |

| Measured | Inclination | Azimuth | Vertical | +N-S   | +E-W   | Vertical | Dogleg      | Build       | Turn        |
|----------|-------------|---------|----------|--------|--------|----------|-------------|-------------|-------------|
| Depth    | (°)         | (°)     | Depth    | (usft) | (usft) | Section  | Rate        | Rate        | Rate        |
| (usft)   |             |         | (usft)   |        |        | (usft)   | (°/100usft) | (°/100usft) | (°/100usft) |
| 0.00     | 0.00        | 0.00    | 0.00     | 0.00   | 0.00   | 0.00     | 0.00        | 0.00        | 0.00        |
| 100.00   | 0.12        | 232.50  | 100.00   | -0.06  | -0.08  | -0.07    | 0.12        | 0.12        | 0.00        |
| 200.00   | 0.02        | 30.34   | 200.00   | -0.11  | -0.16  | -0.14    | 0.14        | -0.10       | 157.84      |
| 300.00   | 0.17        | 287.48  | 300.00   | -0.05  | -0.29  | -0.28    | 0.18        | 0.15        | -102.86     |
| 400.00   | 0.57        | 304.83  | 400.00   | 0.28   | -0.84  | -0.87    | 0.41        | 0.40        | 17.35       |
| 500.00   | 0.64        | 308.57  | 499.99   | 0.91   | -1.68  | -1.79    | 0.08        | 0.07        | 3.74        |
| 600.00   | 0.21        | 309.71  | 599.99   | 1.37   | -2.26  | -2.43    | 0.43        | -0.43       | 1.14        |
| 700.00   | 0.33        | 2.70    | 699.99   | 1.78   | -2.39  | -2.61    | 0.26        | 0.12        | 52.99       |
| 800.00   | 0.50        | 28.50   | 799.99   | 2.46   | -2.18  | -2.50    | 0.24        | 0.17        | 23.80       |
| 860.00   | 0.65        | 43.64   | 859.98   | 2.94   | -1.83  | -2.21    | 0.38        | 0.25        | 28.57       |



# Phoenix Survey Report



|           |                             |                              |                             |
|-----------|-----------------------------|------------------------------|-----------------------------|
| Company:  | COG Operating LLC           | Local Co-ordinate Reference: | Well #820                   |
| Project:  | Eddy County, NM (NAD27 NME) | TVD Reference:               | KB @ 3606.00usft (Basic 38) |
| Site:     | Dodd Federal Unit           | MD Reference:                | KB @ 3608.00usft (Basic 38) |
| Well:     | #820                        | North Reference:             | Gnd                         |
| Wellbore: | WB1 / Job #1412457          | Survey Calculation Method:   | Minimum Curvature           |
| Design:   | Surveys (Basic 38)          | Database:                    | Compass 5000 GCR            |

| Measured<br>Depth<br>(usft) | Inclination<br>(°) | Azimuth<br>(°) | Vertical<br>Depth<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Vertical<br>Section<br>(usft) | Dogleg<br>Rate<br>(°/100usft) | Build<br>Rate<br>(°/100usft) | Turn<br>Rate<br>(°/100usft) |
|-----------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|
| Tie-on to VES Gyro          |                    |                |                             |                 |                 |                               |                               |                              |                             |
| 990.00                      | 0.80               | 39.80          | 989.97                      | 4.17            | -0.74           | -1.30                         | 0.12                          | 0.12                         | -2.95                       |
| First Phoenix MWD Survey    |                    |                |                             |                 |                 |                               |                               |                              |                             |
| 1,053.00                    | 1.50               | 120.60         | 1,052.96                    | 4.09            | 0.25            | -0.31                         | 2.51                          | 1.11                         | 128.25                      |
| 1,117.00                    | 3.80               | 96.60          | 1,116.89                    | 3.42            | 3.08            | 2.58                          | 3.91                          | 3.59                         | -37.50                      |
| 1,180.00                    | 3.90               | 96.10          | 1,179.75                    | 2.95            | 7.28            | 6.81                          | 0.17                          | 0.16                         | -0.79                       |
| 1,243.00                    | 4.70               | 97.30          | 1,242.57                    | 2.39            | 11.97           | 11.53                         | 1.28                          | 1.27                         | 1.90                        |
| 1,307.00                    | 5.90               | 97.50          | 1,306.30                    | 1.63            | 17.84           | 17.45                         | 1.88                          | 1.88                         | 0.31                        |
| 1,370.00                    | 6.00               | 97.30          | 1,368.96                    | 0.79            | 24.31           | 23.98                         | 0.16                          | 0.16                         | -0.32                       |
| 1,433.00                    | 5.60               | 97.70          | 1,431.63                    | -0.04           | 30.62           | 30.34                         | 0.64                          | -0.63                        | 0.63                        |
| 1,496.00                    | 5.20               | 99.20          | 1,494.35                    | -0.91           | 36.49           | 36.27                         | 0.67                          | -0.63                        | 2.38                        |
| 1,560.00                    | 5.60               | 98.30          | 1,558.07                    | -1.82           | 42.44           | 42.29                         | 0.64                          | 0.63                         | -1.41                       |
| 1,623.00                    | 5.60               | 98.30          | 1,620.77                    | -2.71           | 48.53           | 48.44                         | 0.00                          | 0.00                         | 0.00                        |
| 1,686.00                    | 5.90               | 98.30          | 1,683.45                    | -3.62           | 54.77           | 54.75                         | 0.48                          | 0.48                         | 0.00                        |
| 1,749.00                    | 5.40               | 96.80          | 1,746.15                    | -4.44           | 60.92           | 60.95                         | 0.83                          | -0.79                        | -2.38                       |
| 1,813.00                    | 5.80               | 97.90          | 1,809.84                    | -5.24           | 67.11           | 67.20                         | 0.65                          | 0.63                         | 1.72                        |
| 1,876.00                    | 5.60               | 98.40          | 1,872.53                    | -6.13           | 73.31           | 73.45                         | 0.33                          | -0.32                        | 0.79                        |
| 1,939.00                    | 5.80               | 99.00          | 1,935.22                    | -7.08           | 79.49           | 79.71                         | 0.33                          | 0.32                         | 0.95                        |
| 2,003.00                    | 6.20               | 100.10         | 1,998.87                    | -8.19           | 86.09           | 86.40                         | 0.65                          | 0.63                         | 1.72                        |
| 2,066.00                    | 6.00               | 99.60          | 2,061.51                    | -9.33           | 92.68           | 93.09                         | 0.33                          | -0.32                        | -0.79                       |
| 2,126.00                    | 5.50               | 99.00          | 2,121.21                    | -10.31          | 98.62           | 99.10                         | 0.84                          | -0.83                        | -1.00                       |
| 2,189.00                    | 5.80               | 96.50          | 2,183.90                    | -11.14          | 104.76          | 105.30                        | 0.62                          | 0.48                         | -3.97                       |
| 2,252.00                    | 6.80               | 96.20          | 2,246.52                    | -11.90          | 111.63          | 112.21                        | 1.59                          | 1.59                         | -0.48                       |
| 2,317.00                    | 6.90               | 96.50          | 2,311.06                    | -12.76          | 119.34          | 119.96                        | 0.16                          | 0.15                         | 0.46                        |
| 2,380.00                    | 6.80               | 96.80          | 2,373.61                    | -13.63          | 126.80          | 127.47                        | 0.17                          | -0.16                        | 0.48                        |
| 2,444.00                    | 6.60               | 97.50          | 2,437.17                    | -14.58          | 134.21          | 134.94                        | 0.34                          | -0.31                        | 1.09                        |
| 2,507.00                    | 6.60               | 96.90          | 2,499.75                    | -15.47          | 141.39          | 142.18                        | 0.11                          | 0.00                         | -0.96                       |
| 2,570.00                    | 6.40               | 98.50          | 2,562.35                    | -16.42          | 148.46          | 149.31                        | 0.43                          | -0.32                        | 2.54                        |
| 2,697.00                    | 6.40               | 94.70          | 2,688.56                    | -18.05          | 162.51          | 163.45                        | 0.33                          | 0.00                         | -2.99                       |
| 2,762.00                    | 7.00               | 99.60          | 2,753.11                    | -19.00          | 170.03          | 171.03                        | 1.27                          | 0.92                         | 7.54                        |
| 2,825.00                    | 7.10               | 99.80          | 2,815.64                    | -20.31          | 177.65          | 178.76                        | 0.16                          | 0.16                         | 0.32                        |
| 2,889.00                    | 7.10               | 98.90          | 2,879.15                    | -21.59          | 185.46          | 186.67                        | 0.17                          | 0.00                         | -1.41                       |
| 2,952.00                    | 7.10               | 99.20          | 2,941.66                    | -22.82          | 193.15          | 194.45                        | 0.06                          | 0.00                         | 0.48                        |
| 3,015.00                    | 6.50               | 100.40         | 3,004.22                    | -24.08          | 200.50          | 201.91                        | 0.98                          | -0.95                        | 1.90                        |
| 3,078.00                    | 5.80               | 101.80         | 3,066.86                    | -25.38          | 207.12          | 208.65                        | 1.14                          | -1.11                        | 2.22                        |
| 3,142.00                    | 5.70               | 103.40         | 3,130.53                    | -26.78          | 213.38          | 215.03                        | 0.30                          | -0.16                        | 2.50                        |
| 3,205.00                    | 5.70               | 103.70         | 3,193.22                    | -28.24          | 219.46          | 221.26                        | 0.05                          | 0.00                         | 0.48                        |
| 3,268.00                    | 5.70               | 104.30         | 3,255.91                    | -29.75          | 225.53          | 227.48                        | 0.09                          | 0.00                         | 0.95                        |
| 3,331.00                    | 5.80               | 99.60          | 3,318.59                    | -31.06          | 231.70          | 233.77                        | 0.76                          | 0.16                         | -7.46                       |
| 3,395.00                    | 5.90               | 97.60          | 3,382.26                    | -32.03          | 238.15          | 240.29                        | 0.35                          | 0.16                         | -3.13                       |
| 3,521.00                    | 5.80               | 97.50          | 3,507.61                    | -33.72          | 250.88          | 253.14                        | 0.08                          | -0.08                        | -0.08                       |
| 3,648.00                    | 5.80               | 98.00          | 3,633.96                    | -35.45          | 263.60          | 265.97                        | 0.04                          | 0.00                         | 0.39                        |
| 3,775.00                    | 5.80               | 99.10          | 3,760.31                    | -37.36          | 276.29          | 278.80                        | 0.09                          | 0.00                         | 0.87                        |



# Phoenix Survey Report



|           |                             |                              |                             |
|-----------|-----------------------------|------------------------------|-----------------------------|
| Company:  | COG Operating LLC           | Local Co-ordinate Reference: | Well #620                   |
| Project:  | Eddy County, NM (NAD27 NME) | TVD Reference:               | KB @ 3606.00usft (Basic 38) |
| Site:     | Dodd Federal Unit           | MD Reference:                | KB @ 3606.00usft (Basic 38) |
| Well:     | #620                        | North Reference:             | Grid                        |
| Wellbore: | WB1 / Job #1412457          | Survey Calculation Method:   | Minimum Curvature           |
| Design:   | Surveys (Basic 38)          | Database:                    | Compass 5000 GCR            |

| Measured Depth (usft)   | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N-S (usft) | +E-W (usft) | Vertical Section (usft) | Dogleg Ratio (°/100usft) | Build Ratio (°/100usft) | Turn Ratio (°/100usft) |
|-------------------------|-----------------|-------------|-----------------------|-------------|-------------|-------------------------|--------------------------|-------------------------|------------------------|
| 3,901.00                | 6.60            | 100.00      | 3,885.57              | -39.62      | 289.71      | 292.41                  | 0.64                     | 0.63                    | 0.71                   |
| 4,028.00                | 6.40            | 101.10      | 4,011.75              | -42.25      | 303.84      | 306.77                  | 0.19                     | -0.16                   | 0.87                   |
| 4,154.00                | 6.50            | 101.50      | 4,136.95              | -45.03      | 317.72      | 320.89                  | 0.09                     | 0.08                    | 0.32                   |
| 4,281.00                | 5.80            | 96.30       | 4,263.22              | -47.16      | 331.14      | 334.48                  | 0.70                     | -0.55                   | -4.09                  |
| 4,407.00                | 5.80            | 95.00       | 4,388.58              | -48.42      | 343.81      | 347.21                  | 0.10                     | 0.00                    | -1.03                  |
| 4,507.00                | 5.60            | 95.90       | 4,488.08              | -49.36      | 353.70      | 357.13                  | 0.22                     | -0.20                   | 0.90                   |
| Last Phoenix MWD Survey |                 |             |                       |             |             |                         |                          |                         |                        |
| 4,555.00                | 5.60            | 95.90       | 4,535.85              | -49.84      | 358.36      | 361.81                  | 0.00                     | 0.00                    | 0.00                   |
| Projection to TD        |                 |             |                       |             |             |                         |                          |                         |                        |

| Measured Depth (usft) | Vertical Depth (usft) | +N-S (usft) | +E-W (usft) | Comment                  |
|-----------------------|-----------------------|-------------|-------------|--------------------------|
| 860.00                | 859.98                | 2.94        | -1.83       | Tie-on to VES Gyro       |
| 990.00                | 989.97                | 4.17        | -0.74       | First Phoenix MWD Survey |
| 4,507.00              | 4,488.08              | -49.36      | 353.70      | Last Phoenix MWD Survey  |
| 4,555.00              | 4,535.85              | -49.84      | 358.36      | Projection to TD         |

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