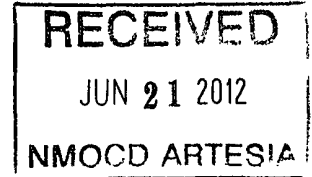


30-015-39576



PO Box 1370  
Artesia, NM 88211-1370  
(575) 748-1288



February 15, 2012

COG, LLC  
Fasken Center, Tower II  
550 West Texas Ave, Suite 1300  
Midland, TX 79701

RE: Burch Keely Unit 19 Federal 2H  
893' FNL & 358' FWL  
Sec. 19, T17S, R30E  
Eddy County, New Mexico

Dear Sir,

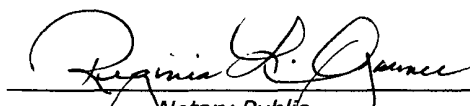
The attached is the Deviation Survey for the above captioned well.

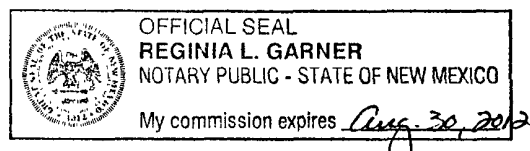
Very truly yours,

  
Eddie C. LaRue  
Operations Manager

State of New Mexico }  
County of Eddy }

*The foregoing was acknowledged before me this 15<sup>th</sup> day of February, 2012.*

  
Regina L. Garner  
Notary Public



Burch Keely Unit 19 Fed 2H

| Date      | Depth | Deviation | Direction | TVD |
|-----------|-------|-----------|-----------|-----|
| 1/20/2012 | 80    | 0.50      |           |     |
| 1/20/2012 | 172   | 0.30      |           |     |
| 1/20/2012 | 204   | 0.10      |           |     |
| 1/22/2012 | 550   | 0.20      |           |     |
| 1/22/2012 | 884   | 1.50      |           |     |
| 1/22/2012 | 1112  | 0.80      |           |     |
| 1/24/2012 | 1343  | 0.60      |           |     |
| 1/24/2012 | 1624  | 0.50      |           |     |
| 1/25/2012 | 2029  | 0.50      |           |     |
| 1/25/2012 | 2404  | 0.40      |           |     |
| 1/26/2012 | 2809  | 0.60      |           |     |
| 1/27/2012 | 3183  | 0.20      |           |     |
| 1/27/2012 | 3557  | 1.00      |           |     |
| 1/27/2012 | 3931  | 0.30      |           |     |
| 1/28/2012 | 4288  | 0.90      | 178.90    |     |
| 1/28/2012 | 4319  | 1.40      | 116.50    |     |
| 1/28/2012 | 4350  | 4.10      | 98.70     |     |
| 1/28/2012 | 4382  | 7.70      | 93.10     |     |
| 1/28/2012 | 4412  | 11.50     | 88.80     |     |
| 1/28/2012 | 4443  | 15.00     | 85.00     |     |
| 1/28/2012 | 4474  | 18.50     | 82.50     |     |
| 1/28/2012 | 4504  | 22.20     | 83.00     |     |
| 1/28/2012 | 4539  | 25.70     | 84.80     |     |
| 1/29/2012 | 4632  | 35.10     | 93.30     |     |
| 1/29/2012 | 4726  | 46.00     | 91.00     |     |
| 1/29/2012 | 4819  | 54.90     | 90.00     |     |
| 1/29/2012 | 4913  | 63.30     | 92.30     |     |
| 1/29/2012 | 4944  | 66.70     | 91.30     |     |
| 1/29/2012 | 4976  | 70.60     | 90.50     |     |
| 1/29/2012 | 5007  | 73.70     | 90.00     |     |
| 1/29/2012 | 5037  | 76.50     | 90.50     |     |
| 1/29/2012 | 5069  | 79.20     | 90.60     |     |
| 1/29/2012 | 5100  | 81.60     | 90.40     |     |
| 1/29/2012 | 5162  | 87.10     | 90.30     |     |
| 1/29/2012 | 5193  | 89.30     | 89.90     |     |
| 1/30/2012 | 5286  | 91.00     | 90.00     |     |
| 1/30/2012 | 5380  | 93.00     | 90.40     |     |
| 1/30/2012 | 5474  | 91.70     | 92.10     |     |
| 1/30/2012 | 5567  | 90.90     | 92.20     |     |
| 1/30/2012 | 5661  | 90.70     | 93.00     |     |
| 1/30/2012 | 5755  | 90.10     | 92.40     |     |
| 1/31/2012 | 5848  | 89.40     | 92.00     |     |
| 1/31/2012 | 5941  | 89.40     | 91.30     |     |

| Date      | Depth | Deviation | Direction | TVD     |
|-----------|-------|-----------|-----------|---------|
| 1/31/2012 | 6035  | 92.60     | 91.40     |         |
| 1/31/2012 | 6128  | 92.70     | 90.40     |         |
| 1/31/2012 | 6129  | 92.70     | 90.40     | 4835.11 |
| 1/31/2012 | 6222  | 92.20     | 90.00     | 4831.14 |
| 1/31/2012 | 6316  | 91.80     | 90.30     |         |
| 2/1/2012  | 6409  | 92.00     | 90.90     |         |
| 2/1/2012  | 6503  | 91.30     | 91.30     |         |
| 2/2/2012  | 6690  | 86.70     | 90.60     | 4826.00 |
| 2/2/2012  | 6783  | 86.90     | 90.60     | 4831.00 |
| 2/2/2012  | 6877  | 87.50     | 90.90     |         |
| 2/2/2012  | 6970  | 87.20     | 91.00     |         |
| 2/2/2012  | 7064  | 88.00     | 90.80     |         |
| 2/3/2012  | 7157  | 89.70     | 90.20     |         |
| 2/3/2012  | 7251  | 90.40     | 89.90     |         |
| 2/3/2012  | 7345  | 91.10     | 89.50     |         |
| 2/4/2012  | 7438  | 90.80     | 89.30     | 4843.00 |
| 2/4/2012  | 7532  | 89.60     | 89.40     | 4843.00 |
| 2/4/2012  | 7326  | 88.90     | 89.90     | 4845.00 |
| 2/4/2012  | 7719  | 88.40     | 90.00     |         |
| 2/4/2012  | 7813  | 87.70     | 91.00     |         |
| 2/4/2012  | 7907  | 88.70     | 91.20     | 4852.60 |
| 2/4/2012  | 8001  | 89.90     | 91.60     | 4853.70 |
| 2/4/2012  | 8095  | 90.70     | 91.10     | 4853.00 |
| 2/5/2012  | 8188  | 91.60     | 91.00     |         |
| 2/5/2012  | 8284  | 90.80     | 91.50     |         |
| 2/5/2012  | 8378  | 91.80     | 91.30     |         |
| 2/5/2012  | 8473  | 91.90     | 90.70     |         |
| 2/6/2012  | 8568  | 87.50     | 90.00     |         |
| 2/6/2012  | 8664  | 88.00     | 89.80     |         |
| 2/6/2012  | 8759  | 89.11     | 88.20     |         |
| 2/6/2012  | 8853  | 90.70     | 88.40     |         |
| 2/6/2012  | 8947  | 91.70     | 87.70     |         |
| 2/6/2012  | 9049  | 92.90     | 87.00     |         |

30-015-39576

# **COG Operating LLC**

Eddy County, NM

Burch Keely Unit 19 Federal 2H

Burch Keely Unit 19 Federal 2H

Wellbore #1

Survey: MWD Surveys

## **Standard Survey Report**

07 February, 2012



**COG Operating LLC**  
**Burch Keely Unit 19 Federal 2H**  
**Eddy County, NM**  
**Plan #2**



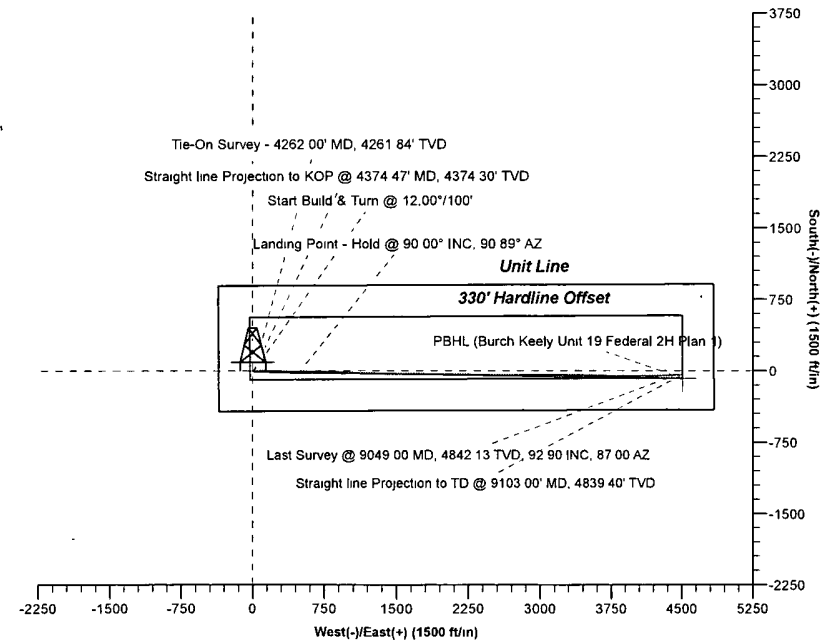
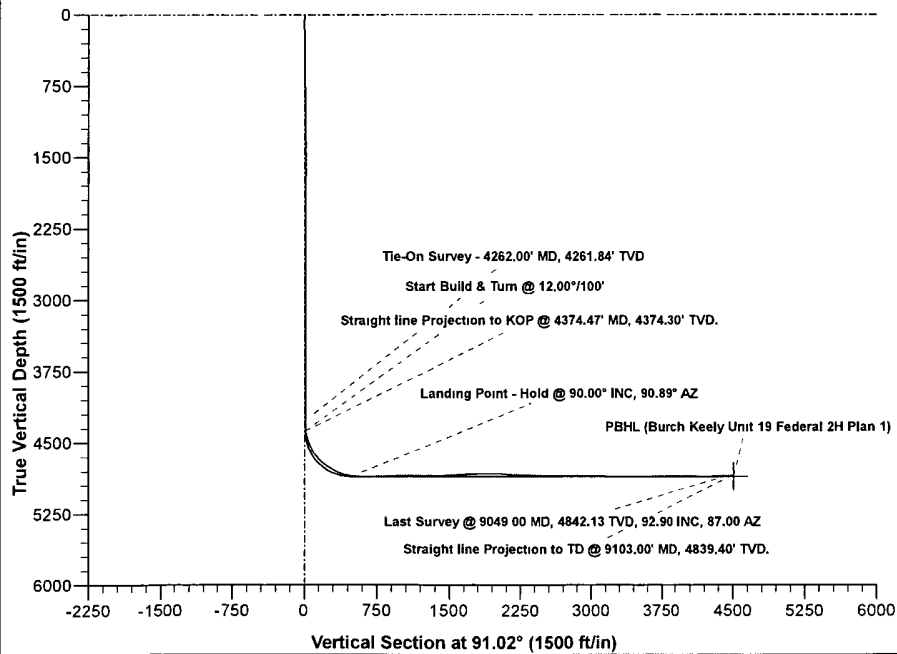
| Surface Location |       | Ground Elev: 3613.00 WELL @ 3631.00ft (Silver Oak #8) |           |                 |                |
|------------------|-------|-------------------------------------------------------|-----------|-----------------|----------------|
| +N/-S            | +E/-W | Northing                                              | Easting   | Latitude        | Longitude      |
| 0.00             | 0.00  | 663885.50                                             | 596869.50 | 32° 49' 28.95 N | 104° 1' 4.78 W |

| TARGET DETAILS                               |         |        |         |           |           |                 |
|----------------------------------------------|---------|--------|---------|-----------|-----------|-----------------|
| Name                                         | TVD     | +N/-S  | +E/-W   | Northing  | Easting   | Latitude        |
| PBHL (Burch Keely Unit 19 Federal 2H Plan 1) | 4850.00 | -80.10 | 4509.50 | 663805.40 | 601379.00 | 32° 49' 28.02 N |



Azimuths to Grd North  
 True North: -0.17°  
 Magnetic North: 7.59°

Magnetic Field  
 Strength 48868 1snT  
 Dip Angle 60.65°  
 Date 1/16/2012  
 Model IGRF2010



| SECTION DETAILS |         |       |        |         |        |         |       |        |         |                                              |
|-----------------|---------|-------|--------|---------|--------|---------|-------|--------|---------|----------------------------------------------|
| Sec             | MD      | Inc   | Azi    | TVD     | +N/-S  | +E/-W   | Dleg  | TFace  | VSec    | Annotation                                   |
| 1               | 4262.00 | 0.67  | 162.73 | 4261.84 | -3.74  | 11.04   | 0.00  | 0.00   | 11.10   | Tie-On Survey - 4262.00' MD, 4261.84' TVD    |
| 2               | 4374.47 | 0.67  | 162.73 | 4374.30 | -5.00  | 11.43   | 0.00  | 0.00   | 11.51   | Start Build & Turn @ 12.00°/100°             |
| 3               | 5122.73 | 90.00 | 90.89  | 4850.00 | -17.69 | 488.75  | 12.00 | -71.84 | 488.99  | Landing Point - Hold @ 90.00° INC, 90.89° AZ |
| 4               | 9143.97 | 90.00 | 90.89  | 4850.00 | -80.10 | 4509.50 | 0.00  | 0.00   | 4510.21 | TD @ 9143.97' MD, 4850.00' TVD               |

# Crescent Directional Drilling

## Survey Report

|                  |                                |                                     |                                     |
|------------------|--------------------------------|-------------------------------------|-------------------------------------|
| <b>Company:</b>  | COG Operating LLC              | <b>Local Co-ordinate Reference:</b> | Site Burch Keely Unit 19 Federal 2H |
| <b>Project:</b>  | Eddy County, NM                | <b>TVD Reference:</b>               | WELL @ 3631 00ft (Silver Oak #8)    |
| <b>Site:</b>     | Burch Keely Unit 19 Federal 2H | <b>MD Reference:</b>                | WELL @ 3631 00ft (Silver Oak #8)    |
| <b>Well:</b>     | Burch Keely Unit 19 Federal 2H | <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>                    | Compass R5000 DB Server             |

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

|                              |                                |                          |                 |
|------------------------------|--------------------------------|--------------------------|-----------------|
| <b>Site</b>                  | Burch Keely Unit 19 Federal 2H |                          |                 |
| <b>Site Position:</b>        |                                | <b>Northing:</b>         | 663,885 50 ft   |
| <b>From:</b>                 | Map                            | <b>Easting:</b>          | 596,869 50 ft   |
| <b>Position Uncertainty:</b> | 0 00 ft                        | <b>Slot Radius:</b>      | 13 200 in       |
|                              |                                | <b>Latitude:</b>         | 32° 49' 28 95 N |
|                              |                                | <b>Longitude:</b>        | 104° 1' 4 78 W  |
|                              |                                | <b>Grid Convergence:</b> | 0 17 °          |

|                             |                                |         |                                  |
|-----------------------------|--------------------------------|---------|----------------------------------|
| <b>Well</b>                 | Burch Keely Unit 19 Federal 2H |         |                                  |
| <b>Well Position</b>        | <b>+N/-S</b>                   | 0 00 ft | <b>Northing:</b> 663,885 50 ft   |
|                             | <b>+E/-W</b>                   | 0 00 ft | <b>Easting:</b> 596,869 50 ft    |
| <b>Position Uncertainty</b> | 0 00 ft                        |         | <b>Latitude:</b> 32° 49' 28 95 N |
|                             |                                |         | <b>Longitude:</b> 104° 1' 4 78 W |
|                             |                                |         | <b>Ground Level:</b> 3,613 00 ft |

|                  |                   |                    |                       |
|------------------|-------------------|--------------------|-----------------------|
| <b>Wellbore</b>  | Wellbore #1       |                    |                       |
| <b>Magnetics</b> | <b>Model Name</b> | <b>Sample Date</b> | <b>Declination</b>    |
|                  |                   |                    | (°)                   |
|                  | IGRF2010          | 1/16/2012          | 7 77                  |
|                  |                   |                    | <b>Dip Angle</b>      |
|                  |                   |                    | (°)                   |
|                  |                   |                    | 60 65                 |
|                  |                   |                    | <b>Field Strength</b> |
|                  |                   |                    | (nT)                  |
|                  |                   |                    | 48,868                |

|                          |                         |                      |                  |
|--------------------------|-------------------------|----------------------|------------------|
| <b>Design</b>            | Wellbore #1             |                      |                  |
| <b>Audit Notes:</b>      |                         |                      |                  |
| <b>Version:</b>          | 1.0                     | <b>Phase:</b>        | ACTUAL           |
|                          |                         | <b>Tie On Depth:</b> | 0 00             |
| <b>Vertical Section:</b> | <b>Depth From (TVD)</b> | <b>+N/-S</b>         | <b>+E/-W</b>     |
|                          | (ft)                    | (ft)                 | (ft)             |
|                          | 0 00                    | 0 00                 | 0 00             |
|                          |                         |                      | <b>Direction</b> |
|                          |                         |                      | (°)              |
|                          |                         |                      | 91 02            |

|                       |             |                            |                  |                    |
|-----------------------|-------------|----------------------------|------------------|--------------------|
| <b>Survey Program</b> | <b>Date</b> | 2/7/2012                   |                  |                    |
| <b>From</b>           | <b>To</b>   | <b>Survey (Wellbore)</b>   | <b>Tool Name</b> | <b>Description</b> |
| (ft)                  | (ft)        |                            |                  |                    |
| 100 00                | 4,262 00    | Gyro Surveys (Wellbore #1) | Good_mag         | Good Magnetic      |
| 4,288 00              | 9,103 00    | MWD Surveys (Wellbore #1)  | Good_mag         | Good Magnetic      |

|               |                 |                    |                |                 |              |              |                 |               |              |             |
|---------------|-----------------|--------------------|----------------|-----------------|--------------|--------------|-----------------|---------------|--------------|-------------|
| <b>Survey</b> | <b>Measured</b> | <b>Inclination</b> | <b>Azimuth</b> | <b>Vertical</b> | <b>+N/-S</b> | <b>+E/-W</b> | <b>Vertical</b> | <b>Dogleg</b> | <b>Build</b> | <b>Turn</b> |
|               | <b>Depth</b>    | (°)                | (°)            | <b>Depth</b>    | (ft)         | (ft)         | <b>Section</b>  | <b>Rate</b>   | <b>Rate</b>  | <b>Rate</b> |
|               | (ft)            |                    |                | (ft)            |              |              | (ft)            | (°/100ft)     | (°/100ft)    | (°/100ft)   |
|               | 4,262.00        | 0 67               | 162 73         | 4,261.84        | -3 74        | 11 04        | 11 10           | 0 00          | 0 00         | 0 00        |
|               | 4,288 00        | 0 90               | 178.90         | 4,287 84        | -4 09        | 11 08        | 11.16           | 1 22          | 0 88         | 62 19       |
|               | 4,319.00        | 1 40               | 116 50         | 4,318 83        | -4 51        | 11 43        | 11 51           | 4 08          | 1 61         | -201 29     |
|               | 4,350.00        | 4 10               | 98.70          | 4,349 80        | -4 84        | 12 86        | 12 95           | 9 03          | 8 71         | -57 42      |
|               | 4,382 00        | 7.70               | 93 10          | 4,381 62        | -5 13        | 16 14        | 16 22           | 11.38         | 11 25        | -17 50      |
|               | 4,413.00        | 11.50              | 88 80          | 4,412 18        | -5 18        | 21 30        | 21.39           | 12 47         | 12 26        | -13 87      |
|               | 4,444.00        | 15 00              | 85 00          | 4,442 35        | -4 76        | 28 39        | 28 47           | 11 63         | 11 29        | -12 26      |
|               | 4,475 00        | 18 50              | 82 50          | 4,472 03        | -3 77        | 37 26        | 37 33           | 11 52         | 11 29        | -8 06       |
|               | 4,506 00        | 22 20              | 83 00          | 4,501 09        | -2 42        | 47.96        | 47 99           | 11 95         | 11 94        | 1 61        |
|               | 4,539 00        | 25 90              | 84.80          | 4,531 22        | -1.00        | 61 33        | 61 34           | 11 43         | 11 21        | 5 45        |

# Crescent Directional Drilling

## Survey Report

|           |                                |                              |                                     |
|-----------|--------------------------------|------------------------------|-------------------------------------|
| Company:  | COG Operating LLC              | Local Co-ordinate Reference: | Site Burch Keely Unit 19 Federal 2H |
| Project:  | Eddy County, NM                | TVD Reference:               | WELL @ 3631 00ft (Silver Oak #8)    |
| Site:     | Burch Keely Unit 19 Federal 2H | MD Reference:                | WELL @ 3631 00ft (Silver Oak #8)    |
| Well:     | Burch Keely Unit 19 Federal 2H | North Reference:             | Grid                                |
| Wellbore: | Wellbore #1                    | Survey Calculation Method:   | Minimum Curvature                   |
| Design:   | Wellbore #1                    | Database:                    | Compass R5000 DB Server             |

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------|
| 4,570.00            | 29.10           | 87.70       | 4,558.72            | -0.09      | 75.61      | 75.60                 | 11.19                 | 10.32                | 9.35                |
| 4,602.00            | 31.70           | 91.70       | 4,586.32            | -0.02      | 91.79      | 91.78                 | 10.29                 | 8.13                 | 12.50               |
| 4,633.00            | 35.10           | 93.30       | 4,612.20            | -0.78      | 108.83     | 108.83                | 11.33                 | 10.97                | 5.16                |
| 4,664.00            | 38.80           | 93.20       | 4,636.97            | -1.83      | 127.44     | 127.45                | 11.94                 | 11.94                | -0.32               |
| 4,695.00            | 42.50           | 92.30       | 4,660.48            | -2.80      | 147.60     | 147.63                | 12.08                 | 11.94                | -2.90               |
| 4,726.00            | 46.00           | 91.00       | 4,682.68            | -3.41      | 169.22     | 169.26                | 11.66                 | 11.29                | -4.19               |
| 4,757.00            | 49.40           | 90.40       | 4,703.55            | -3.69      | 192.15     | 192.18                | 11.06                 | 10.97                | -1.94               |
| 4,789.00            | 52.10           | 89.80       | 4,723.79            | -3.73      | 216.92     | 216.96                | 8.56                  | 8.44                 | -1.88               |
| 4,820.00            | 54.90           | 90.00       | 4,742.23            | -3.69      | 241.84     | 241.87                | 9.05                  | 9.03                 | 0.65                |
| 4,851.00            | 57.40           | 90.60       | 4,759.49            | -3.82      | 267.58     | 267.61                | 8.22                  | 8.06                 | 1.94                |
| 4,882.00            | 60.20           | 91.90       | 4,775.55            | -4.41      | 294.09     | 294.12                | 9.72                  | 9.03                 | 4.19                |
| 4,913.00            | 63.30           | 92.30       | 4,790.22            | -5.41      | 321.38     | 321.42                | 10.06                 | 10.00                | 1.29                |
| 4,944.00            | 66.70           | 91.30       | 4,803.32            | -6.29      | 349.45     | 349.51                | 11.35                 | 10.97                | -3.23               |
| 4,976.00            | 70.60           | 90.50       | 4,814.97            | -6.75      | 379.25     | 379.31                | 12.41                 | 12.19                | -2.50               |
| 5,007.00            | 73.70           | 90.00       | 4,824.47            | -6.88      | 408.75     | 408.81                | 10.12                 | 10.00                | -1.61               |
| 5,038.00            | 76.50           | 90.50       | 4,832.44            | -7.01      | 438.70     | 438.76                | 9.17                  | 9.03                 | 1.61                |
| 5,069.00            | 79.20           | 90.60       | 4,838.97            | -7.30      | 469.01     | 469.06                | 8.72                  | 8.71                 | 0.32                |
| 5,100.00            | 81.60           | 90.40       | 4,844.14            | -7.57      | 499.57     | 499.62                | 7.77                  | 7.74                 | -0.65               |
| 5,131.00            | 84.50           | 90.40       | 4,847.89            | -7.78      | 530.34     | 530.39                | 9.35                  | 9.35                 | 0.00                |
| 5,162.00            | 87.10           | 90.30       | 4,850.16            | -7.97      | 561.25     | 561.30                | 8.39                  | 8.39                 | -0.32               |
| 5,194.00            | 89.30           | 89.90       | 4,851.16            | -8.03      | 593.23     | 593.28                | 6.99                  | 6.88                 | -1.25               |
| 5,286.00            | 91.00           | 90.00       | 4,850.92            | -7.95      | 685.23     | 685.26                | 1.85                  | 1.85                 | 0.11                |
| 5,380.00            | 93.00           | 90.40       | 4,847.64            | -8.28      | 779.17     | 779.19                | 2.17                  | 2.13                 | 0.43                |
| 5,474.00            | 91.70           | 92.10       | 4,843.79            | -10.33     | 873.06     | 873.10                | 2.28                  | -1.38                | 1.81                |
| 5,568.00            | 90.90           | 92.20       | 4,841.65            | -13.85     | 966.97     | 967.06                | 0.86                  | -0.85                | 0.11                |
| 5,662.00            | 90.70           | 93.00       | 4,840.34            | -18.11     | 1,060.86   | 1,061.02              | 0.88                  | -0.21                | 0.85                |
| 5,755.00            | 90.10           | 92.40       | 4,839.69            | -22.50     | 1,153.75   | 1,153.97              | 0.91                  | -0.65                | -0.65               |
| 5,848.00            | 89.40           | 92.00       | 4,840.10            | -26.07     | 1,246.68   | 1,246.95              | 0.87                  | -0.75                | -0.43               |
| 5,942.00            | 89.40           | 91.30       | 4,841.08            | -28.77     | 1,340.64   | 1,340.94              | 0.74                  | 0.00                 | -0.74               |
| 6,035.00            | 92.60           | 91.30       | 4,839.46            | -30.88     | 1,433.59   | 1,433.91              | 3.44                  | 3.44                 | 0.00                |
| 6,129.00            | 92.70           | 90.40       | 4,835.11            | -32.27     | 1,527.48   | 1,527.81              | 0.96                  | 0.11                 | -0.96               |
| 6,222.00            | 92.20           | 90.00       | 4,831.14            | -32.60     | 1,620.39   | 1,620.72              | 0.69                  | -0.54                | -0.43               |
| 6,316.00            | 91.80           | 90.30       | 4,827.86            | -32.84     | 1,714.33   | 1,714.65              | 0.53                  | -0.43                | 0.32                |
| 6,410.00            | 92.00           | 90.90       | 4,824.74            | -33.83     | 1,808.28   | 1,808.59              | 0.67                  | 0.21                 | 0.64                |
| 6,503.00            | 91.30           | 91.30       | 4,822.06            | -35.61     | 1,901.22   | 1,901.55              | 0.87                  | -0.75                | 0.43                |
| 6,597.00            | 88.40           | 90.60       | 4,822.31            | -37.17     | 1,995.20   | 1,995.54              | 3.17                  | -3.09                | -0.74               |
| 6,690.00            | 86.70           | 90.60       | 4,826.28            | -38.14     | 2,088.10   | 2,088.45              | 1.83                  | -1.83                | 0.00                |
| 6,784.00            | 86.90           | 90.60       | 4,831.53            | -39.13     | 2,181.95   | 2,182.30              | 0.21                  | 0.21                 | 0.00                |
| 6,877.00            | 87.50           | 90.90       | 4,836.07            | -40.34     | 2,274.83   | 2,275.19              | 0.72                  | 0.65                 | 0.32                |
| 6,971.00            | 87.20           | 91.00       | 4,840.42            | -41.90     | 2,368.72   | 2,369.09              | 0.34                  | -0.32                | 0.11                |
| 7,065.00            | 88.00           | 90.80       | 4,844.36            | -43.37     | 2,462.62   | 2,463.01              | 0.88                  | 0.85                 | -0.21               |
| 7,159.00            | 89.70           | 90.20       | 4,846.24            | -44.19     | 2,556.60   | 2,556.98              | 1.92                  | 1.81                 | -0.64               |
| 7,252.00            | 90.40           | 89.90       | 4,846.16            | -44.28     | 2,649.60   | 2,649.96              | 0.82                  | 0.75                 | -0.32               |

# Crescent Directional Drilling

## Survey Report

|           |                                |                              |                                     |
|-----------|--------------------------------|------------------------------|-------------------------------------|
| Company:  | COG Operating, LLC             | Local Co-ordinate Reference: | Site Burch Keely Unit 19 Federal 2H |
| Project:  | Eddy County, NM                | TVD Reference:               | WELL @ 3631 00ft (Silver Oak #8)    |
| Site:     | Burch Keely Unit 19 Federal 2H | MD Reference:                | WELL @ 3631 00ft (Silver Oak #8)    |
| Well:     | Burch Keely Unit 19 Federal 2H | North Reference:             | Grid                                |
| Wellbore: | Wellbore #1                    | Survey Calculation Method:   | Minimum Curvature                   |
| Design:   | Wellbore #1                    | Database:                    | Compass R5000 DB Server             |

| Survey                                                      |                 |             |                     |            |            |                       |                       |                      |                     |
|-------------------------------------------------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------|
| Measured Depth (ft)                                         | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
| 7,345 00                                                    | 91 10           | 89 50       | 4,844 94            | -43 79     | 2,742 59   | 2,742 93              | 0 87                  | 0 75                 | -0 43               |
| 7,439 00                                                    | 90 80           | 89 30       | 4,843 39            | -42 81     | 2,836 57   | 2,836 88              | 0 38                  | -0 32                | -0 21               |
| 7,532 00                                                    | 89 60           | 89 40       | 4,843 06            | -41 75     | 2,929 56   | 2,929 84              | 1 29                  | -1 29                | 0 11                |
| 7,626 00                                                    | 88 90           | 89 90       | 4,844 29            | -41 18     | 3,023 55   | 3,023 80              | 0 92                  | -0 74                | 0 53                |
| 7,720 00                                                    | 88 40           | 90 00       | 4,846 51            | -41 09     | 3,117 52   | 3,117 76              | 0 54                  | -0 53                | 0 11                |
| 7,814 00                                                    | 87 70           | 91 00       | 4,849 70            | -41 91     | 3,211 46   | 3,211 70              | 1 30                  | -0 74                | 1 06                |
| 7,907 00                                                    | 88 70           | 91 20       | 4,852 63            | -43 70     | 3,304 40   | 3,304 65              | 1 10                  | 1 08                 | 0 22                |
| 8,001 00                                                    | 89 90           | 91 60       | 4,853 77            | -45 99     | 3,398 36   | 3,398 64              | 1 35                  | 1 28                 | 0 43                |
| 8,095 00                                                    | 90 70           | 91 10       | 4,853 28            | -48 21     | 3,492 33   | 3,492 64              | 1 00                  | 0 85                 | -0 53               |
| 8,189 00                                                    | 91 60           | 91 00       | 4,851 40            | -49 93     | 3,586 30   | 3,586 62              | 0 96                  | 0 96                 | -0 11               |
| 8,284 00                                                    | 90 80           | 91 50       | 4,849 41            | -52 00     | 3,681 25   | 3,681 60              | 0 99                  | -0 84                | 0 53                |
| 8,378 00                                                    | 91 80           | 91 30       | 4,847 27            | -54 30     | 3,775 20   | 3,775 57              | 1 08                  | 1 06                 | -0 21               |
| 8,474 00                                                    | 91 90           | 90 70       | 4,844 17            | -55 97     | 3,871 13   | 3,871 52              | 0 63                  | 0 10                 | -0 63               |
| 8,569 00                                                    | 88 90           | 90 40       | 4,843 51            | -56 89     | 3,966 12   | 3,966 50              | 3 17                  | -3 16                | -0 32               |
| 8,664 00                                                    | 88 00           | 89 80       | 4,846 08            | -57 05     | 4,061 08   | 4,061 45              | 1 14                  | -0 95                | -0 63               |
| 8,759 00                                                    | 89 40           | 89 20       | 4,848 24            | -56 22     | 4,156 05   | 4,156 39              | 1 60                  | 1 47                 | -0 63               |
| 8,854 00                                                    | 90 70           | 88 40       | 4,848 15            | -54 23     | 4,251 03   | 4,251 32              | 1 61                  | 1 37                 | -0 84               |
| 8,948 00                                                    | 91 70           | 87 70       | 4,846 18            | -51 04     | 4,344 95   | 4,345 17              | 1 30                  | 1 06                 | -0 74               |
| 9,049 00                                                    | 92 90           | 87 00       | 4,842 13            | -46 37     | 4,445 76   | 4,445 88              | 1 38                  | 1 19                 | -0 69               |
| Last Survey @ 9049.00 MD, 4842.13 TVD, 92.90 INC, 87.00 AZ  |                 |             |                     |            |            |                       |                       |                      |                     |
| 9,103 00                                                    | 92 90           | 87 00       | 4,839 40            | -43 55     | 4,499 61   | 4,499 68              | 0 00                  | 0 00                 | 0 00                |
| Straight line Projection to TD @ 9103.00' MD, 4839.40' TVD. |                 |             |                     |            |            |                       |                       |                      |                     |

| Survey Annotations  |                     |                   |            |                                                            |
|---------------------|---------------------|-------------------|------------|------------------------------------------------------------|
| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates |            | Comment                                                    |
|                     |                     | +N/-S (ft)        | +E/-W (ft) |                                                            |
| 9,049 00            | 4,842 13            | -46 37            | 4,445 76   | Last Survey @ 9049 00 MD, 4842 13 TVD, 92 90 INC, 87 00 AZ |
| 9,103 00            | 4,839 40            | -43 55            | 4,499 61   | Straight line Projection to TD @ 9103 00' MD, 4839 40' TVD |

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