



A GYRO TECHNOLOGIES INC. COMPANY

P.O. Box 261021  
Corpus Christi, Texas 78426  
(361) 767-0602 • (800) 606-GYRO • Fax (361) 767-0612

30-015-41555

January 3, 2014

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

Attn: Kanicia Castillo



RE: **Stonewall 9 Fee 3H**

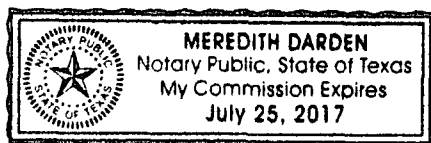
Please find enclosed a copy of the survey from 0.00' to 4339.00' ran on the above referenced well.

Sincerely,  
  
Keith Havelka  
Operations

STATE OF TEXAS §  
COUNTY OF NUECES §

This instrument was acknowledged before me on the 3<sup>rd</sup> day of January, A.D., 2014, by Keith Havelka.

Meredith Darden  
Notary Public, State of Texas





Company: COG Operating LLC (Concho)  
 Lease/Well: Stonewall 9 Fee/3H  
 Location: B9 19S 26E  
 Rig Name: Silveroak 3  
 State/County: New Mexico/Eddy  
 Latitude: 32.67, Longitude: -104.39  
 GRID North is 0.03 Degrees West of True North  
 VS-Azi: 0.00 Degrees



Depth Reference : R.K.B. = 17 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut  
 Minimum Curvature Method  
 Report Date/Time: 1/2/2014 / 10:13

Vaughn Energy Services  
 Midland, TX  
 432-563-5444

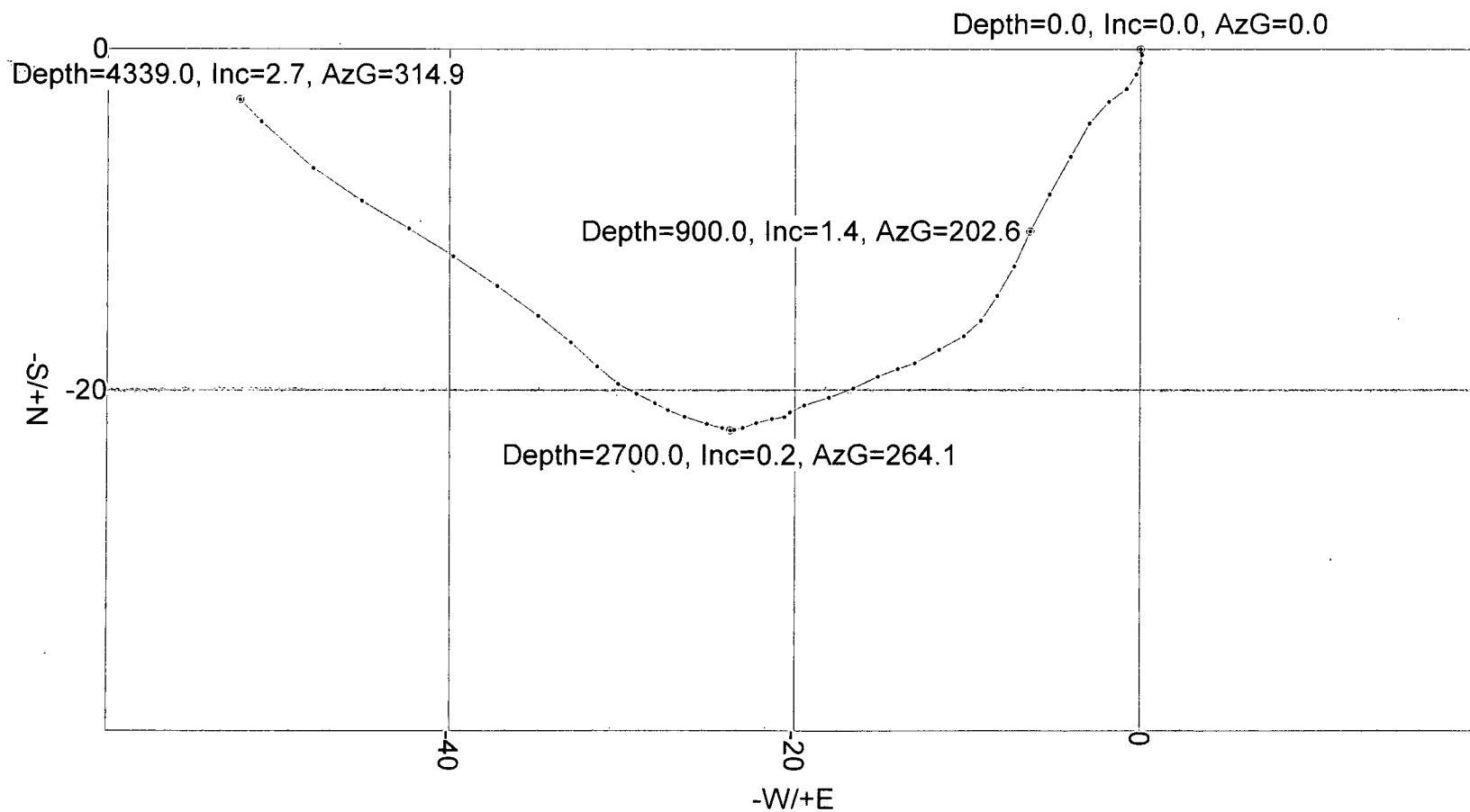
Surveyor: Andrew Askew  
 Stonewall 9 Fee 3H / API 30-015-41555

| 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                  | 0.41                 | 166.40                    | 100.00    | -0.35       | 0.08        | -0.35                     | 0.36                      | 166.40                      | 0.41                          |
| 200.00                  | 0.22                 | 233.43                    | 200.00    | -0.81       | 0.02        | -0.81                     | 0.81                      | 178.87                      | 0.38                          |
| 300.00                  | 0.65                 | 190.84                    | 299.99    | -1.48       | -0.24       | -1.48                     | 1.50                      | 189.34                      | 0.51                          |
| 400.00                  | 0.62                 | 236.02                    | 399.99    | -2.34       | -0.80       | -2.34                     | 2.47                      | 198.82                      | 0.49                          |
| 500.00                  | 0.84                 | 233.31                    | 499.98    | -3.08       | -1.83       | -3.08                     | 3.58                      | 210.75                      | 0.22                          |
| 600.00                  | 1.13                 | 212.88                    | 599.97    | -4.34       | -2.95       | -4.34                     | 5.25                      | 214.21                      | 0.45                          |
| 700.00                  | 1.44                 | 206.39                    | 699.94    | -6.29       | -4.04       | -6.29                     | 7.48                      | 212.72                      | 0.35                          |
| 800.00                  | 1.46                 | 211.20                    | 799.91    | -8.51       | -5.26       | -8.51                     | 10.00                     | 211.73                      | 0.12                          |
| 900.00                  | 1.36                 | 202.62                    | 899.88    | -10.69      | -6.38       | -10.69                    | 12.44                     | 210.82                      | 0.23                          |
| 1000.00                 | 1.20                 | 205.62                    | 999.85    | -12.72      | -7.28       | -12.72                    | 14.66                     | 209.79                      | 0.17                          |
| 1100.00                 | 1.09                 | 214.06                    | 1099.83   | -14.46      | -8.27       | -14.46                    | 16.66                     | 209.77                      | 0.20                          |
| 1200.00                 | 0.89                 | 211.83                    | 1199.82   | -15.91      | -9.22       | -15.91                    | 18.39                     | 210.08                      | 0.20                          |
| 1300.00                 | 0.72                 | 246.78                    | 1299.81   | -16.82      | -10.20      | -16.82                    | 19.68                     | 211.24                      | 0.51                          |
| 1400.00                 | 1.16                 | 237.53                    | 1399.80   | -17.61      | -11.64      | -17.61                    | 21.11                     | 213.45                      | 0.46                          |
| 1500.00                 | 0.69                 | 244.57                    | 1499.78   | -18.42      | -13.04      | -18.42                    | 22.57                     | 215.30                      | 0.48                          |
| 1600.00                 | 0.52                 | 260.15                    | 1599.78   | -18.75      | -14.03      | -18.75                    | 23.42                     | 216.81                      | 0.23                          |
| 1700.00                 | 0.90                 | 241.59                    | 1699.77   | -19.21      | -15.18      | -19.21                    | 24.48                     | 218.31                      | 0.44                          |
| 1800.00                 | 0.89                 | 246.92                    | 1799.76   | -19.89      | -16.58      | -19.89                    | 25.90                     | 219.83                      | 0.08                          |

| 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                 | 0.88                 | 250.96                    | 1899.75   | -20.44      | -18.02      | -20.44                    | 27.25                     | 221.40                      | 0.06                          |
| 2000.00                 | 0.83                 | 253.54                    | 1999.73   | -20.90      | -19.44      | -20.90                    | 28.54                     | 222.93                      | 0.06                          |
| 2100.00                 | 0.28                 | 216.57                    | 2099.73   | -21.30      | -20.28      | -21.30                    | 29.41                     | 223.59                      | 0.62                          |
| 2200.00                 | 0.22                 | 246.59                    | 2199.73   | -21.57      | -20.60      | -21.57                    | 29.83                     | 223.68                      | 0.15                          |
| 2300.00                 | 0.61                 | 266.74                    | 2299.73   | -21.68      | -21.31      | -21.68                    | 30.40                     | 224.50                      | 0.42                          |
| 2400.00                 | 0.49                 | 241.40                    | 2399.72   | -21.92      | -22.22      | -21.92                    | 31.21                     | 225.39                      | 0.27                          |
| 2500.00                 | 0.47                 | 257.09                    | 2499.72   | -22.21      | -22.99      | -22.21                    | 31.97                     | 225.99                      | 0.13                          |
| 2600.00                 | 0.09                 | 258.87                    | 2599.72   | -22.32      | -23.47      | -22.32                    | 32.39                     | 226.44                      | 0.37                          |
| 2700.00                 | 0.20                 | 264.09                    | 2699.72   | -22.35      | -23.73      | -22.35                    | 32.60                     | 226.71                      | 0.11                          |
| 2800.00                 | 0.36                 | 298.10                    | 2799.72   | -22.22      | -24.18      | -22.22                    | 32.85                     | 227.42                      | 0.22                          |
| 2900.00                 | 0.70                 | 280.18                    | 2899.71   | -21.97      | -25.06      | -21.97                    | 33.33                     | 228.76                      | 0.37                          |
| 3000.00                 | 0.89                 | 293.26                    | 2999.70   | -21.55      | -26.37      | -21.55                    | 34.06                     | 230.74                      | 0.26                          |
| 3100.00                 | 0.28                 | 288.83                    | 3099.70   | -21.17      | -27.32      | -21.17                    | 34.56                     | 232.23                      | 0.61                          |
| 3200.00                 | 0.69                 | 302.69                    | 3199.69   | -20.76      | -28.06      | -20.76                    | 34.91                     | 233.50                      | 0.42                          |
| 3300.00                 | 0.70                 | 293.00                    | 3299.68   | -20.20      | -29.13      | -20.20                    | 35.45                     | 235.26                      | 0.12                          |
| 3400.00                 | 0.69                 | 303.51                    | 3399.68   | -19.63      | -30.19      | -19.63                    | 36.01                     | 236.98                      | 0.13                          |
| 3500.00                 | 1.15                 | 314.58                    | 3499.66   | -18.59      | -31.41      | -18.59                    | 36.50                     | 239.38                      | 0.49                          |
| 3600.00                 | 1.24                 | 311.04                    | 3599.64   | -17.17      | -32.95      | -17.17                    | 37.15                     | 242.47                      | 0.12                          |
| 3700.00                 | 1.58                 | 307.87                    | 3699.61   | -15.61      | -34.85      | -15.61                    | 38.19                     | 245.87                      | 0.35                          |
| 3800.00                 | 1.81                 | 304.38                    | 3799.57   | -13.88      | -37.24      | -13.88                    | 39.74                     | 249.57                      | 0.25                          |
| 3900.00                 | 1.72                 | 304.02                    | 3899.52   | -12.15      | -39.79      | -12.15                    | 41.60                     | 253.02                      | 0.09                          |
| 4000.00                 | 1.85                 | 299.04                    | 3999.47   | -10.52      | -42.44      | -10.52                    | 43.73                     | 256.07                      | 0.20                          |
| 4100.00                 | 1.84                 | 301.89                    | 4099.42   | -8.89       | -45.22      | -8.89                     | 46.09                     | 258.88                      | 0.09                          |
| 4200.00                 | 2.08                 | 306.14                    | 4199.36   | -6.97       | -48.05      | -6.97                     | 48.55                     | 261.74                      | 0.28                          |
| 4300.00                 | 2.62                 | 316.26                    | 4299.28   | -4.25       | -51.09      | -4.25                     | 51.27                     | 265.24                      | 0.68                          |
| 4339.00                 | 2.70                 | 314.92                    | 4338.24   | -2.96       | -52.36      | -2.96                     | 52.44                     | 266.76                      | 0.27                          |



Vaughn Energy Services  
Midland, TX  
432-563-5444  
Surveyor: Andrew Askew  
Stonewall 9 Fee 3H / API 30-015-41555



VES Survey Date: 12/10/2013



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

COG OPER, LLC

RECEIVED

JAN 10 2014

ARTESIA WEST

December 23, 2013

COG, LLC  
One Concho Center  
600 W. Illinois Ave.  
Midland, TX 79701

RE: Stonewall 9 Fee #3H  
150' FSL & 2310' FEL  
Sec. 9, T19S, R26E  
Eddy County, New Mexico

Dear Sir,

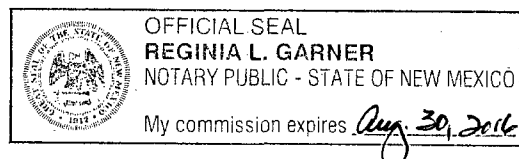
The attached is the Deviation Survey for the above captioned well.

Very truly yours,

Chris Graham  
Drilling Superintendent

State of New Mexico }  
County of Eddy }

*The foregoing was acknowledged before me this 23<sup>rd</sup> day of December, 2013.*

  
Notary Public

STONEWALL 9 FEE # 3H

| Date       | Depth | Deviation | Direction |
|------------|-------|-----------|-----------|
| 12/5/2013  | 334   | 0.40      | 0.00      |
| 12/5/2013  | 632   | 1.20      | 0.00      |
| 12/6/2013  | 1127  | 1.00      | 0.00      |
| 12/7/2013  | 1251  | 0.70      | 0.00      |
| 12/7/2013  | 1721  | 0.60      | 0.00      |
| 12/8/2013  | 2188  | 0.20      | 0.00      |
| 12/8/2013  | 2658  | 0.30      | 0.00      |
| 12/9/2013  | 3126  | 0.00      | 0.00      |
| 12/9/2013  | 3592  | 1.10      | 0.00      |
| 12/13/2013 | 2585  | 4.80      | 8.70      |
| 12/13/2013 | 2616  | 7.70      | 8.80      |
| 12/13/2013 | 2647  | 10.90     | 7.70      |
| 12/13/2013 | 2678  | 14.50     | 6.80      |
| 12/14/2013 | 2709  | 17.50     | 6.90      |
| 12/14/2013 | 2741  | 20.40     | 7.70      |
| 12/14/2013 | 2772  | 23.00     | 8.60      |
| 12/14/2013 | 2804  | 25.40     | 8.60      |
| 12/14/2013 | 2835  | 27.40     | 9.00      |
| 12/14/2013 | 2866  | 30.10     | 9.00      |
| 12/14/2013 | 2898  | 32.50     | 8.20      |
| 12/14/2013 | 2929  | 33.80     | 6.30      |
| 12/14/2013 | 2960  | 37.10     | 6.10      |
| 12/14/2013 | 2992  | 41.10     | 5.30      |
| 12/14/2013 | 3023  | 44.70     | 5.10      |
| 12/14/2013 | 3054  | 47.60     | 5.30      |
| 12/14/2013 | 3086  | 54.20     | 6.10      |
| 12/14/2013 | 3117  | 54.80     | 7.10      |
| 12/14/2013 | 3148  | 58.30     | 6.90      |
| 12/15/2013 | 3242  | 67.70     | 6.90      |
| 12/15/2013 | 3273  | 70.60     | 7.00      |
| 12/15/2013 | 3304  | 73.50     | 6.70      |
| 12/15/2013 | 3335  | 77.00     | 7.20      |
| 12/15/2013 | 3367  | 79.70     | 7.90      |
| 12/15/2013 | 3398  | 82.60     | 7.50      |
| 12/15/2013 | 3480  | 87.50     | 4.60      |
| 12/15/2013 | 3574  | 89.60     | 3.90      |
| 12/15/2013 | 3668  | 91.80     | 3.30      |
| 12/15/2013 | 3762  | 92.80     | 1.40      |
| 12/16/2013 | 3855  | 93.50     | 359.50    |
| 12/16/2013 | 3948  | 93.70     | 358.10    |
| 12/16/2013 | 4042  | 93.20     | 356.80    |
| 12/16/2013 | 4135  | 92.10     | 356.50    |
| 12/16/2013 | 4228  | 91.20     | 355.70    |



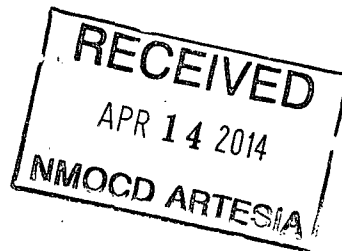
## **COG Operating LLC**

**Eddy County, New Mexico (NAD 27 NME)**

**Stonewall 9 Fee**

**#3H**

**WB2/Job #1311608**



**Survey: Phoenix MWD Survey**

## **Standard Survey Report**

**20 December, 2013**





## Survey Report



|           |                                       |                              |                                 |
|-----------|---------------------------------------|------------------------------|---------------------------------|
| Company:  | COG Operating LLC                     | Local Co-ordinate Reference: | Well #3H                        |
| Project:  | Eddy County - New Mexico (NAD 27 NME) | TVD Reference:               | KB @ 3375.00usft (Silver Oak 3) |
| Site:     | Stonewall 9 Fee                       | MD Reference:                | KB @ 3375.00usft (Silver Oak 3) |
| Well:     | #3H                                   | North Reference:             | Grid                            |
| Wellbore: | WB2/Job #1311608                      | Survey Calculation Method:   | Minimum Curvature               |
| Design:   | Surveys (Silver Oak 3)                | Database:                    | Compass 5000 GCR DB             |

|             |                                       |               |                |
|-------------|---------------------------------------|---------------|----------------|
| Project     | Eddy County - New Mexico (NAD 27 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                  | Stonewall 9 Fee |                   |                     |
| Site Position:        |                 | Northing:         | 611,835.50 usft     |
| From:                 | Map             | Easting:          | 482,702.00 usft     |
| Position Uncertainty: | 0.00 usft       | Slot Radius:      | 13-3/16 "           |
|                       |                 | Latitude:         | 32° 40' 55.28160 N  |
|                       |                 | Longitude:        | 104° 23' 22.39586 W |
|                       |                 | Grid Convergence: | -0.03 °             |

|                      |           |                     |                    |
|----------------------|-----------|---------------------|--------------------|
| Well                 | #3H       |                     |                    |
| Well Position        | +N-S      | 0.00 usft           | Northing:          |
|                      | +E-W      | 0.00 usft           | Easting:           |
| Position Uncertainty | 0.00 usft | Wellhead Elevation: | usft               |
|                      |           | Latitude:           | 32° 40' 5.32537 N  |
|                      |           | Longitude:          | 104° 23' 6.17354 W |
|                      |           | Ground Level:       | 3,357.00 usft      |

|           |                  |             |                |
|-----------|------------------|-------------|----------------|
| Wellbore  | WB2/Job #1311608 |             |                |
| Magnetics | Model Name       | Sample Date | Declination    |
|           |                  |             | (°)            |
|           | IGRF2010_14      | 12/10/13    | 7.69           |
|           |                  |             | Dip Angle      |
|           |                  |             | (°)            |
|           |                  |             | 60.40          |
|           |                  |             | Field Strength |
|           |                  |             | (nT)           |
|           |                  |             | 48,545         |

|                   |                        |               |           |
|-------------------|------------------------|---------------|-----------|
| Design            | Surveys (Silver Oak 3) |               |           |
| Audit Notes:      |                        |               |           |
| Version:          | 1.0                    | Phase:        | ACTUAL    |
|                   |                        | Tie On Depth: | 2,500.00  |
| Vertical Section: | Depth From (TVD)       | +N/S          | +E/W      |
|                   | (usft)                 | (usft)        | (usft)    |
|                   | 0.00                   | 0.00          | 0.00      |
|                   |                        |               | Direction |
|                   |                        |               | (°)       |
|                   |                        |               | 359.69    |

|                |               |                                         |                             |
|----------------|---------------|-----------------------------------------|-----------------------------|
| Survey Program | Date 12/20/13 |                                         |                             |
| From           | To            | Survey (Wellbore)                       | Tool Name                   |
| (usft)         | (usft)        |                                         |                             |
| 100.00         | 2,500.00      | MS Gyro Survey / Pilot Hole (WB1/Job #1 | CB-GYRO-MS                  |
| 2,500.00       | 7,772.00      | Phoenix MWD Survey (WB2/Job #131160     | MWD                         |
|                |               |                                         | Description                 |
|                |               |                                         | Camera based gyro multishot |
|                |               |                                         | MWD - Standard              |

|                          |             |         |          |        |        |          |             |             |             |
|--------------------------|-------------|---------|----------|--------|--------|----------|-------------|-------------|-------------|
| Survey                   |             |         |          |        |        |          |             |             |             |
| 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) |
| 2,500.00                 | 0.47        | 257.09  | 2,499.72 | -22.21 | -22.99 | -22.09   | 0.00        | 0.00        | 0.00        |
| 2,554.00                 | 2.20        | 0.60    | 2,553.71 | -21.22 | -23.20 | -21.10   | 4.36        | 3.20        | 191.69      |
| First Phoenix MWD Survey |             |         |          |        |        |          |             |             |             |
| 2,585.00                 | 4.80        | 8.70    | 2,584.64 | -19.35 | -22.99 | -19.22   | 8.52        | 8.39        | 26.13       |
| 2,616.00                 | 7.70        | 8.80    | 2,615.46 | -16.01 | -22.48 | -15.89   | 9.35        | 9.35        | 0.32        |
| 2,647.00                 | 10.90       | 7.70    | 2,646.05 | -11.05 | -21.77 | -10.93   | 10.34       | 10.32       | -3.55       |
| 2,678.00                 | 14.50       | 6.80    | 2,676.28 | -4.29  | -20.92 | -4.18    | 11.63       | 11.61       | -2.90       |
| 2,709.00                 | 17.50       | 6.90    | 2,706.08 | -4.19  | -19.90 | 4.30     | 9.68        | 9.68        | 0.32        |
| 2,741.00                 | 20.40       | 7.70    | 2,736.34 | 14.50  | -18.57 | 14.60    | 9.10        | 9.06        | 2.50        |
| 2,772.00                 | 23.00       | 8.60    | 2,765.14 | 25.84  | -16.94 | 25.93    | 8.46        | 8.39        | 2.90        |





## Survey Report



|           |                                       |                              |                                 |
|-----------|---------------------------------------|------------------------------|---------------------------------|
| Company:  | COG Operating LLC                     | Local Co-ordinate Reference: | Well #3H                        |
| Project:  | Eddy County, New Mexico (NAD 27, NME) | TVD Reference:               | KB @ 3375.00usft (Silver Oak 3) |
| Site:     | Stonewall 9 Fee                       | MD Reference:                | KB @ 3375.00usft (Silver Oak 3) |
| Well:     | #3H                                   | North Reference:             | Grid                            |
| Wellbore: | WB2/Job #1311608                      | Survey Calculation Method:   | Minimum Curvature               |
| Design:   | Surveys (Silver Oak 3)                | Database:                    | Compass 5000 GCR DB             |

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 2,804.00              | 25.40           | 8.60        | 2,794.33              | 38.81        | -14.98       | 38.89                   | 7.50                    | 7.50                   | 0.00                  |
| 2,835.00              | 27.40           | 9.00        | 2,822.09              | 52.43        | -12.87       | 52.50                   | 6.48                    | 6.45                   | 1.29                  |
| 2,866.00              | 30.10           | 9.00        | 2,849.27              | 67.16        | -10.54       | 67.21                   | 8.71                    | 8.71                   | 0.00                  |
| 2,898.00              | 32.50           | 8.20        | 2,876.61              | 83.59        | -8.05        | 83.64                   | 7.61                    | 7.50                   | -2.50                 |
| 2,929.00              | 33.80           | 6.30        | 2,902.56              | 100.41       | -5.92        | 100.44                  | 5.37                    | 4.19                   | -6.13                 |
| 2,961.00              | 37.10           | 6.10        | 2,928.63              | 118.86       | -3.92        | 118.88                  | 10.32                   | 10.31                  | -0.63                 |
| 2,992.00              | 41.10           | 5.30        | 2,952.68              | 138.31       | -1.98        | 138.32                  | 13.01                   | 12.90                  | -2.58                 |
| 3,023.00              | 44.70           | 5.10        | 2,975.39              | 159.32       | -0.07        | 159.32                  | 11.62                   | 11.61                  | -0.65                 |
| 3,054.00              | 47.60           | 5.30        | 2,996.86              | 181.58       | 1.96         | 181.57                  | 9.37                    | 9.35                   | 0.65                  |
| 3,086.00              | 51.20           | 6.10        | 3,017.68              | 205.75       | 4.37         | 205.73                  | 11.41                   | 11.25                  | 2.50                  |
| 3,117.00              | 54.80           | 7.10        | 3,036.33              | 230.34       | 7.22         | 230.30                  | 11.89                   | 11.61                  | 3.23                  |
| 3,148.00              | 58.30           | 6.90        | 3,053.42              | 256.01       | 10.37        | 255.95                  | 11.30                   | 11.29                  | -0.65                 |
| 3,179.00              | 61.80           | 6.50        | 3,068.89              | 282.68       | 13.51        | 282.61                  | 11.35                   | 11.29                  | -1.29                 |
| 3,211.00              | 64.80           | 6.50        | 3,083.27              | 311.08       | 16.74        | 310.99                  | 9.38                    | 9.38                   | 0.00                  |
| 3,242.00              | 67.70           | 6.90        | 3,095.75              | 339.26       | 20.05        | 339.15                  | 9.43                    | 9.35                   | 1.29                  |
| 3,273.00              | 70.60           | 7.00        | 3,106.79              | 368.01       | 23.56        | 367.88                  | 9.36                    | 9.35                   | 0.32                  |
| 3,304.00              | 73.50           | 6.70        | 3,116.34              | 397.29       | 27.07        | 397.14                  | 9.40                    | 9.35                   | -0.97                 |
| 3,335.00              | 77.00           | 7.20        | 3,124.23              | 427.05       | 30.70        | 426.87                  | 11.40                   | 11.29                  | 1.61                  |
| 3,367.00              | 79.70           | 7.90        | 3,130.69              | 458.11       | 34.82        | 457.92                  | 8.71                    | 8.44                   | 2.19                  |
| 3,398.00              | 82.60           | 7.50        | 3,135.46              | 488.46       | 38.92        | 488.25                  | 9.44                    | 9.35                   | -1.29                 |
| 3,429.00              | 84.80           | 6.80        | 3,138.86              | 519.03       | 42.76        | 518.80                  | 7.44                    | 7.10                   | -2.26                 |
| 3,480.00              | 87.50           | 4.60        | 3,142.29              | 569.66       | 47.81        | 569.39                  | 6.82                    | 5.29                   | -4.31                 |
| 3,574.00              | 89.60           | 3.90        | 3,144.67              | 663.37       | 54.77        | 663.06                  | 2.35                    | 2.23                   | -0.74                 |
| 3,668.00              | 91.80           | 3.30        | 3,143.52              | 757.17       | 60.68        | 756.83                  | 2.43                    | 2.34                   | -0.64                 |
| 3,762.00              | 92.80           | 1.40        | 3,139.74              | 851.01       | 64.53        | 850.64                  | 2.28                    | 1.06                   | -2.02                 |
| 3,855.00              | 93.50           | 359.50      | 3,134.63              | 943.86       | 65.26        | 943.49                  | 2.17                    | 0.75                   | -2.04                 |
| 3,948.00              | 93.70           | 358.10      | 3,128.79              | 1,036.65     | 63.31        | 1,036.29                | 1.52                    | 0.22                   | -1.51                 |
| 4,042.00              | 93.20           | 356.80      | 3,123.14              | 1,130.39     | 59.14        | 1,130.05                | 1.48                    | -0.53                  | -1.38                 |
| 4,135.00              | 92.10           | 356.50      | 3,118.84              | 1,223.13     | 53.71        | 1,222.82                | 1.23                    | -1.18                  | -0.32                 |
| 4,229.00              | 91.20           | 355.70      | 3,116.13              | 1,316.87     | 47.32        | 1,316.59                | 1.28                    | -0.96                  | -0.85                 |
| 4,322.00              | 91.10           | 356.30      | 3,114.26              | 1,409.62     | 40.83        | 1,409.38                | 0.65                    | -0.11                  | 0.65                  |
| 4,415.00              | 90.50           | 357.50      | 3,112.97              | 1,502.48     | 35.80        | 1,502.26                | 1.44                    | -0.65                  | 1.29                  |
| 4,509.00              | 90.80           | 358.00      | 3,111.90              | 1,596.40     | 32.11        | 1,596.20                | 0.62                    | 0.32                   | 0.53                  |
| 4,602.00              | 90.60           | 359.20      | 3,110.76              | 1,689.36     | 29.84        | 1,689.17                | 1.31                    | -0.22                  | 1.29                  |
| 4,696.00              | 90.20           | 0.20        | 3,110.11              | 1,783.36     | 29.35        | 1,783.17                | 1.15                    | -0.43                  | 1.06                  |
| 4,789.00              | 89.70           | 1.10        | 3,110.19              | 1,876.35     | 30.40        | 1,876.16                | 1.11                    | -0.54                  | 0.97                  |
| 4,883.00              | 90.30           | 1.30        | 3,110.19              | 1,970.33     | 32.37        | 1,970.12                | 0.67                    | 0.64                   | 0.21                  |
| 4,977.00              | 91.00           | 1.00        | 3,109.12              | 2,064.30     | 34.26        | 2,064.09                | 0.81                    | 0.74                   | -0.32                 |
| 5,071.00              | 89.90           | 0.70        | 3,108.38              | 2,158.29     | 35.65        | 2,158.06                | 1.21                    | -1.17                  | -0.32                 |
| 5,164.00              | 89.80           | 0.20        | 3,108.63              | 2,251.28     | 36.38        | 2,251.05                | 0.55                    | -0.11                  | -0.54                 |
| 5,257.00              | 90.20           | 0.70        | 3,108.63              | 2,344.28     | 37.11        | 2,344.04                | 0.69                    | 0.43                   | 0.54                  |
| 5,351.00              | 89.90           | 0.20        | 3,108.55              | 2,438.28     | 37.85        | 2,438.04                | 0.62                    | -0.32                  | -0.53                 |
| 5,446.00              | 90.20           | 359.40      | 3,108.46              | 2,533.27     | 37.52        | 2,533.03                | 0.90                    | 0.32                   | -0.84                 |



## Survey Report



|           |                                      |                              |                                 |
|-----------|--------------------------------------|------------------------------|---------------------------------|
| Company:  | COG Operating LLC                    | Local Co-ordinate Reference: | Well #3H                        |
| Project:  | Eddy County, New Mexico (NAD 27 NME) | TVD Reference:               | KB @ 3375.00usft (Silver Oak 3) |
| Site:     | Stonewall 9 Fee                      | MD Reference:                | KB @ 3375.00usft (Silver Oak 3) |
| Well:     | #3H                                  | North Reference:             | Grid                            |
| Wellbore: | WB2/Job #1311608                     | Survey Calculation Method:   | Minimum Curvature               |
| Design:   | Surveys (Silver Oak 3)               | Database:                    | Compass 5000 GCR DB             |

| Measured Depth (usft)   | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|-------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 5,539.00                | 89.70           | 358.40      | 3,108.54              | 2,626.26     | 35.74        | 2,626.02                | 1.20                    | -0.54                  | -1.08                 |
| 5,634.00                | 89.70           | 358.50      | 3,109.04              | 2,721.22     | 33.17        | 2,721.00                | 0.11                    | 0.00                   | 0.11                  |
| 5,727.00                | 90.70           | 357.70      | 3,108.72              | 2,814.17     | 30.08        | 2,813.96                | 1.38                    | 1.08                   | -0.86                 |
| 5,821.00                | 90.50           | 357.80      | 3,107.73              | 2,908.09     | 26.39        | 2,907.90                | 0.24                    | -0.21                  | 0.11                  |
| 5,914.00                | 91.70           | 356.30      | 3,105.95              | 3,000.94     | 21.61        | 3,000.78                | 2.07                    | 1.29                   | -1.61                 |
| 6,008.00                | 92.70           | 356.10      | 3,102.34              | 3,094.67     | 15.38        | 3,094.54                | 1.08                    | 1.06                   | -0.21                 |
| 6,101.00                | 92.40           | 356.60      | 3,098.20              | 3,187.39     | 9.47         | 3,187.29                | 0.63                    | -0.32                  | 0.54                  |
| 6,194.00                | 92.50           | 357.20      | 3,094.22              | 3,280.16     | 4.44         | 3,280.09                | 0.65                    | 0.11                   | 0.65                  |
| 6,288.00                | 92.80           | 357.50      | 3,089.88              | 3,373.96     | 0.10         | 3,373.91                | 0.45                    | 0.32                   | 0.32                  |
| 6,382.00                | 91.80           | 358.10      | 3,086.11              | 3,467.82     | -3.50        | 3,467.79                | 1.24                    | -1.06                  | 0.64                  |
| 6,476.00                | 91.30           | 358.90      | 3,083.56              | 3,561.75     | -5.96        | 3,561.73                | 1.00                    | -0.53                  | 0.85                  |
| 6,570.00                | 91.60           | 359.50      | 3,081.18              | 3,655.71     | -7.27        | 3,655.70                | 0.71                    | 0.32                   | 0.64                  |
| 6,663.00                | 90.80           | 0.20        | 3,079.24              | 3,748.69     | -7.52        | 3,748.67                | 1.14                    | -0.86                  | 0.75                  |
| 6,757.00                | 91.20           | 0.20        | 3,077.60              | 3,842.67     | -7.19        | 3,842.65                | 0.43                    | 0.43                   | 0.00                  |
| 6,852.00                | 90.10           | 0.60        | 3,076.52              | 3,937.66     | -6.53        | 3,937.64                | 1.23                    | -1.16                  | 0.42                  |
| 6,946.00                | 89.90           | 0.50        | 3,076.52              | 4,031.66     | -5.62        | 4,031.63                | 0.24                    | -0.21                  | -0.11                 |
| 7,039.00                | 90.10           | 0.10        | 3,076.52              | 4,124.66     | -5.14        | 4,124.62                | 0.48                    | 0.22                   | -0.43                 |
| 7,133.00                | 90.50           | 359.70      | 3,076.03              | 4,218.65     | -5.30        | 4,218.62                | 0.60                    | 0.43                   | -0.43                 |
| 7,226.00                | 91.20           | 359.20      | 3,074.65              | 4,311.64     | -6.19        | 4,311.61                | 0.92                    | 0.75                   | -0.54                 |
| 7,320.00                | 90.60           | 357.70      | 3,073.17              | 4,405.59     | -8.74        | 4,405.57                | 1.72                    | -0.64                  | -1.60                 |
| 7,414.00                | 90.10           | 358.00      | 3,072.60              | 4,499.52     | -12.26       | 4,499.52                | 0.62                    | -0.53                  | 0.32                  |
| 7,508.00                | 90.60           | 357.90      | 3,072.02              | 4,593.46     | -15.63       | 4,593.48                | 0.54                    | 0.53                   | -0.11                 |
| 7,601.00                | 91.20           | 357.40      | 3,070.56              | 4,686.37     | -19.44       | 4,686.41                | 0.84                    | 0.65                   | -0.54                 |
| 7,695.00                | 92.10           | 356.70      | 3,067.85              | 4,780.20     | -24.27       | 4,780.27                | 1.21                    | 0.96                   | -0.74                 |
| 7,712.00                | 92.30           | 356.50      | 3,067.20              | 4,797.16     | -25.28       | 4,797.23                | 1.66                    | 1.18                   | -1.18                 |
| Last Phoenix MWD Survey |                 |             |                       |              |              |                         |                         |                        |                       |
| 7,772.00                | 92.30           | 356.50      | 3,064.79              | 4,857.00     | -28.94       | 4,857.09                | 0.00                    | 0.00                   | 0.00                  |
| Projection to TD        |                 |             |                       |              |              |                         |                         |                        |                       |

| Survey Annotations    |                       |                   |              |                          |
|-----------------------|-----------------------|-------------------|--------------|--------------------------|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |              | Comment                  |
|                       |                       | +N/-S (usft)      | +E/-W (usft) |                          |
| 2,554.00              | 2,553.71              | -21.22            | -23.20       | First Phoenix MWD Survey |
| 7,712.00              | 3,067.20              | 4,797.16          | -25.28       | Last Phoenix MWD Survey  |
| 7,772.00              | 3,064.79              | 4,857.00          | -28.94       | Projection to TD         |

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