

DISTRICT I  
1625 N. French Dr., Hobbs, NM 88240  
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II  
811 S. First St., Artesia, NM 88210  
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III  
1000 Rio Brazos Road, Aztec, NM 87410  
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505  
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico  
Energy, Minerals & Natural Resources Department  
OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, New Mexico 87505

Form C-102  
Revised August 1, 2011  
Submit one copy to appropriate  
District Office

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

|                                    |                                            |                                          |
|------------------------------------|--------------------------------------------|------------------------------------------|
| API Number<br><b>30-015- 42205</b> | Pool Code<br><b>3250</b>                   | Pool Name<br><b>Atoka; Glorieta Yeso</b> |
| Property Code<br><b>38909</b>      | Property Name<br><b>SHERMAN 4 FEE</b>      | Well Number<br><b>5H</b>                 |
| OGRID No.<br><b>229137</b>         | Operator Name<br><b>COG OPERATING, LLC</b> | Elevation<br><b>3350'</b>                |

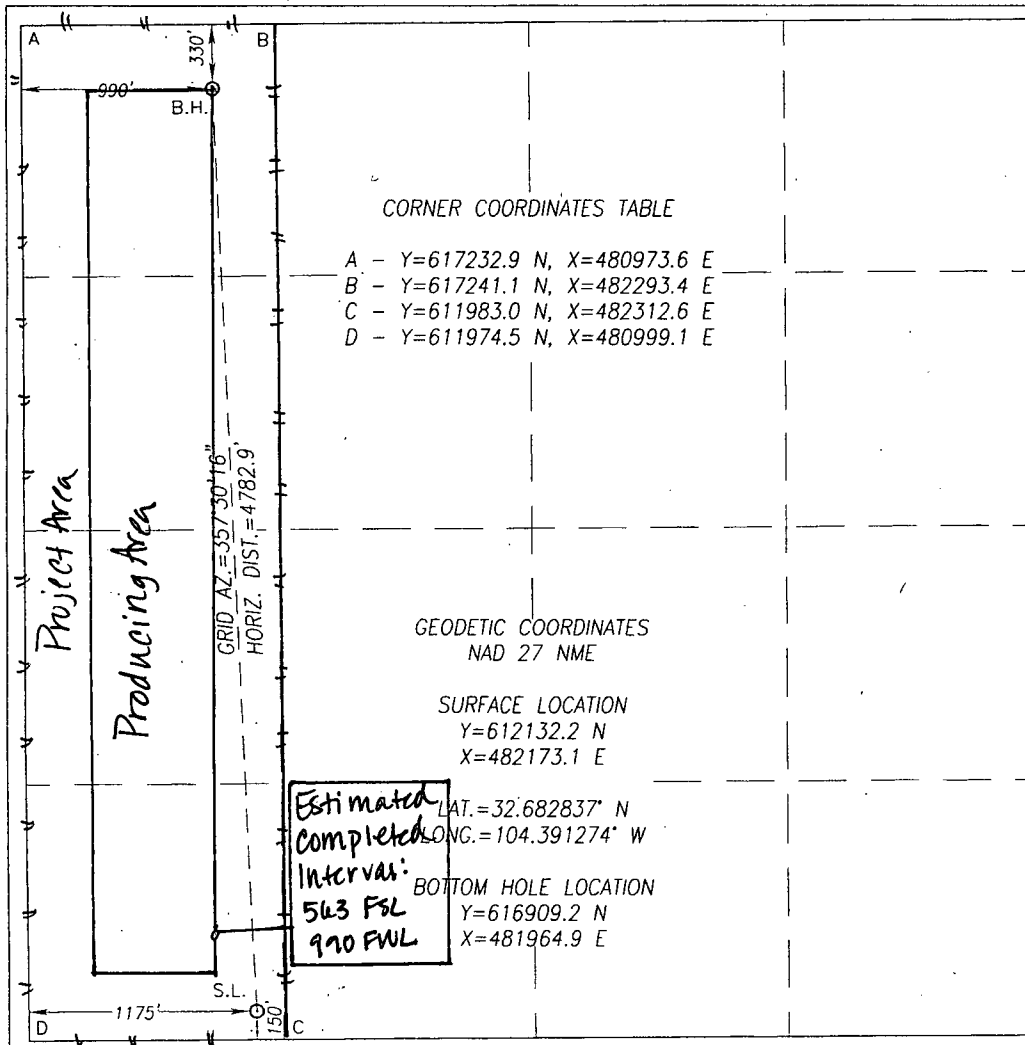
Surface Location

| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| M             | 4       | 19-S     | 26-E  |         | 150           | SOUTH            | 1175          | WEST           | EDDY   |

Bottom Hole Location If Different From Surface

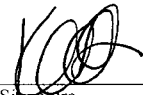
| UL or lot No.                    | Section         | Township           | Range     | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|----------------------------------|-----------------|--------------------|-----------|---------|---------------|------------------|---------------|----------------|--------|
| D                                | 4               | 19-S               | 26-E      |         | 330           | NORTH            | 990           | WEST           | EDDY   |
| Dedicated Acres<br><b>159.07</b> | Joint or Infill | Consolidation Code | Order No. |         |               |                  |               |                |        |

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



OPERATOR CERTIFICATION

I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

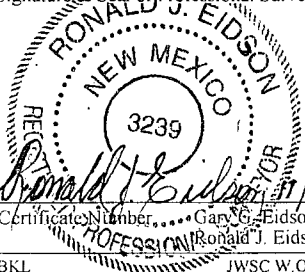
  
Date **3-18-14**  
Signature  
Printed Name **Kelly J. Holly**  
E-mail Address **kholly@concho.com**

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

NOVEMBER 14, 2013

Date of Survey  
Signature & Seal of Professional Surveyor:

  
Certificate Number **3239**  
Name **Ronald J. Eidson**  
JWSC W.O.: 13.11.1271



## **COG Operating LLC**

**Eddy County, NM (NAD 27 NME)**

**Sherman 4 Fee**

**#5H**

**WB1**

**Plan: Plan #1 03-17-14**

**Surface: 150' FSL, 1175' FWL, Sec 4, T18S, R26E, Unit M**

**PP: 563' FSL, 990' FWL, Sec 4, T18S, R26E, Unit M**

**BHL: 330' FNL, 990' FWL, Sec 4, T19S, R26E, Unit D**

## **Standard Planning Report**

**17 March, 2014**





Phoenix Technology Services  
Planning Report



|           |                              |                              |                   |
|-----------|------------------------------|------------------------------|-------------------|
| Database: | GCR DB                       | Local Co-ordinate Reference: | Well #5H          |
| Company:  | COG Operating LLC            | TVD Reference:               | GL @ 3350.00usft  |
| Project:  | Eddy County, NM (NAD 27 NME) | MD Reference:                | GL @ 3350.00usft  |
| Site:     | Sherman 4 Fee                | North Reference:             | Grid              |
| Well:     | #5H                          | Survey Calculation Method:   | Minimum Curvature |
| Wellbore: | WB1                          |                              |                   |
| Design:   | Plan #1, 03-17-14            |                              |                   |

|             |                                      |               |                |
|-------------|--------------------------------------|---------------|----------------|
| Project:    | Eddy County, NM (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:                 | Sherman 4 Fee |              |                 |                                |
| Site Position:        |               | Northing:    | 612,151.80 usft | Latitude: 32.68290             |
| From:                 | Map           | Easting:     | 485,212.40 usft | Longitude: 104° 22' 53.02452 W |
| Position Uncertainty: | 0.00 usft     | Slot Radius: | 13-3/16 "       | Grid Convergence: -0.03 °      |

|                      |           |                     |               |                 |
|----------------------|-----------|---------------------|---------------|-----------------|
| Well:                | #5H       |                     |               |                 |
| Well Position        | +N/-S     | -19.60 usft         | Northing:     | 612,132.20 usft |
|                      | +E/-W     | -3,039.30 usft      | Easting:      | 482,173.10 usft |
| Position Uncertainty | 0.00 usft | Wellhead Elevation: | Ground Level: | 3,350.00 usft   |

|            |             |             |                 |               |                     |
|------------|-------------|-------------|-----------------|---------------|---------------------|
| Wellbore:  | WB1         |             |                 |               |                     |
| Magnetics: | Model Name  | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|            | IGRF2010_14 | 03/17/14    | 7.66            | 60.40         | 48,527              |

|                   |                   |        |               |           |
|-------------------|-------------------|--------|---------------|-----------|
| Design:           | Plan #1, 03-17-14 |        |               |           |
| Audit Notes:      |                   |        |               |           |
| Version:          | Phase:            | PLAN   | Tie On Depth: | 0.00      |
| Vertical Section: | Depth From (TVD)  | +N/-S  | +E/-W         | Direction |
|                   | (usft)            | (usft) | (usft)        | (°)       |
|                   | 0.00              | 0.00   | 0.00          | 357.50    |

| Plan Sections         |                 |             |                       |              |              |                         |                        |                       |         |                    |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|------------------------|-----------------------|---------|--------------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) | TFO (°) | Target             |
| 0.00                  | 0.00            | 0.00        | 0.00                  | 0.00         | 0.00         | 0.00                    | 0.00                   | 0.00                  | 0.00    |                    |
| 3,091.63              | 0.00            | 0.00        | 3,091.63              | 0.00         | 0.00         | 0.00                    | 0.00                   | 0.00                  | 0.00    |                    |
| 3,912.54              | 90.30           | 335.00      | 3,612.49              | 474.54       | -221.28      | 11.00                   | 11.00                  | 0.00                  | 335.00  |                    |
| 4,852.29              | 90.30           | 3.19        | 3,607.51              | 1,388.03     | -397.25      | 3.00                    | 0.00                   | 3.00                  | 89.93   |                    |
| 8,246.57              | 90.30           | 3.19        | 3,590.00              | 4,777.00     | -208.20      | 0.00                    | 0.00                   | 0.00                  | 0.00    | PBHL-Sherman 4 Fee |



Phoenix Technology Services  
Planning Report



|           |                              |                              |                   |
|-----------|------------------------------|------------------------------|-------------------|
| Database: | GCR DB                       | Local Co-ordinate Reference: | Well #5H          |
| Company:  | COG Operating LLC            | TVD Reference:               | GL @ 3350.00usft  |
| Project:  | Eddy County, NM (NAD 27 NME) | MD Reference:                | GL @ 3350.00usft  |
| Site:     | Sherman 4 Fee                | North Reference:             | Grid              |
| Well:     | #5H                          | Survey Calculation Method:   | Minimum Curvature |
| Wellbore: | WB1                          |                              |                   |
| Design:   | Plan #1-03-17-14             |                              |                   |

| Planned Survey                  |                 |             |                       |              |              |                         |                         |                        |                       |
|---------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 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) |
| 0.00                            | 0.00            | 0.00        | 0.00                  | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 3,091.43                        | 0.00            | 0.00        | 3,091.43              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| KOP: 11 1/2' 100' Build         |                 |             |                       |              |              |                         |                         |                        |                       |
| 3,091.63                        | 0.00            | 0.00        | 3,091.63              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 3,100.00                        | 0.92            | 335.00      | 3,100.00              | 0.06         | -0.03        | 0.06                    | 11.00                   | 11.00                  | 0.00                  |
| 3,200.00                        | 11.92           | 335.00      | 3,199.22              | 10.18        | -4.75        | 10.38                   | 11.00                   | 11.00                  | 0.00                  |
| 3,300.00                        | 22.92           | 335.00      | 3,294.49              | 37.27        | -17.38       | 37.99                   | 11.00                   | 11.00                  | 0.00                  |
| 3,400.00                        | 33.92           | 335.00      | 3,382.30              | 80.34        | -37.46       | 81.90                   | 11.00                   | 11.00                  | 0.00                  |
| 3,500.00                        | 44.92           | 335.00      | 3,459.43              | 137.80       | -64.26       | 140.47                  | 11.00                   | 11.00                  | 0.00                  |
| 3,600.00                        | 55.92           | 335.00      | 3,523.05              | 207.55       | -96.78       | 211.57                  | 11.00                   | 11.00                  | 0.00                  |
| 3,700.00                        | 66.92           | 335.00      | 3,570.81              | 287.02       | -133.84      | 292.57                  | 11.00                   | 11.00                  | 0.00                  |
| 3,800.00                        | 77.92           | 335.00      | 3,600.97              | 373.28       | -174.06      | 380.51                  | 11.00                   | 11.00                  | 0.00                  |
| 3,844.46                        | 82.81           | 335.00      | 3,608.41              | 412.99       | -192.58      | 420.99                  | 11.00                   | 11.00                  | 0.00                  |
| PP: Sherman 4 Fee #5H           |                 |             |                       |              |              |                         |                         |                        |                       |
| 3,900.00                        | 88.92           | 335.00      | 3,612.41              | 463.18       | -215.98      | 472.14                  | 11.00                   | 11.00                  | 0.00                  |
| 3,907.08                        | 89.70           | 335.00      | 3,612.49              | 469.59       | -218.97      | 478.68                  | 11.00                   | 11.00                  | 0.00                  |
| TL: 3615' TVD @ 0 VZ, 90.3° Inc |                 |             |                       |              |              |                         |                         |                        |                       |
| 3,912.54                        | 90.30           | 335.00      | 3,612.49              | 474.54       | -221.28      | 483.73                  | 11.00                   | 11.00                  | 0.00                  |
| LP: Begin 3°/100' Turn          |                 |             |                       |              |              |                         |                         |                        |                       |
| 4,000.00                        | 90.30           | 337.62      | 3,612.03              | 554.62       | -256.42      | 565.26                  | 3.00                    | 0.00                   | 3.00                  |
| 4,100.00                        | 90.31           | 340.62      | 3,611.50              | 648.05       | -292.05      | 660.15                  | 3.00                    | 0.00                   | 3.00                  |
| 4,200.00                        | 90.31           | 343.62      | 3,610.97              | 743.21       | -322.74      | 756.56                  | 3.00                    | 0.00                   | 3.00                  |
| 4,300.00                        | 90.31           | 346.62      | 3,610.43              | 839.84       | -348.41      | 854.22                  | 3.00                    | 0.00                   | 3.00                  |
| 4,400.00                        | 90.31           | 349.62      | 3,609.90              | 937.69       | -368.99      | 952.87                  | 3.00                    | 0.00                   | 3.00                  |
| 4,500.00                        | 90.31           | 352.62      | 3,609.36              | 1,036.48     | -384.41      | 1,052.24                | 3.00                    | 0.00                   | 3.00                  |
| 4,600.00                        | 90.30           | 355.62      | 3,608.83              | 1,135.94     | -394.65      | 1,152.05                | 3.00                    | 0.00                   | 3.00                  |
| 4,700.00                        | 90.30           | 358.62      | 3,608.30              | 1,235.80     | -399.67      | 1,252.03                | 3.00                    | 0.00                   | 3.00                  |
| 4,800.00                        | 90.30           | 1.62        | 3,607.78              | 1,335.79     | -399.45      | 1,351.92                | 3.00                    | 0.00                   | 3.00                  |
| 4,852.29                        | 90.30           | 3.19        | 3,607.51              | 1,388.03     | -397.25      | 1,404.01                | 3.00                    | 0.00                   | 3.00                  |
| Hold 90.30° Inc, 3.19° Azm      |                 |             |                       |              |              |                         |                         |                        |                       |
| 4,900.00                        | 90.30           | 3.19        | 3,607.26              | 1,435.67     | -394.59      | 1,451.49                | 0.00                    | 0.00                   | 0.00                  |
| 5,000.00                        | 90.30           | 3.19        | 3,606.75              | 1,535.51     | -389.02      | 1,550.99                | 0.00                    | 0.00                   | 0.00                  |
| 5,100.00                        | 90.30           | 3.19        | 3,606.23              | 1,635.35     | -383.45      | 1,650.50                | 0.00                    | 0.00                   | 0.00                  |
| 5,200.00                        | 90.30           | 3.19        | 3,605.72              | 1,735.20     | -377.88      | 1,750.01                | 0.00                    | 0.00                   | 0.00                  |
| 5,300.00                        | 90.30           | 3.19        | 3,605.20              | 1,835.04     | -372.32      | 1,849.51                | 0.00                    | 0.00                   | 0.00                  |
| 5,400.00                        | 90.30           | 3.19        | 3,604.68              | 1,934.88     | -366.75      | 1,949.02                | 0.00                    | 0.00                   | 0.00                  |
| 5,500.00                        | 90.30           | 3.19        | 3,604.17              | 2,034.73     | -361.18      | 2,048.53                | 0.00                    | 0.00                   | 0.00                  |
| 5,600.00                        | 90.30           | 3.19        | 3,603.65              | 2,134.57     | -355.61      | 2,148.03                | 0.00                    | 0.00                   | 0.00                  |
| 5,700.00                        | 90.30           | 3.19        | 3,603.14              | 2,234.42     | -350.04      | 2,247.54                | 0.00                    | 0.00                   | 0.00                  |
| 5,800.00                        | 90.30           | 3.19        | 3,602.62              | 2,334.26     | -344.47      | 2,347.04                | 0.00                    | 0.00                   | 0.00                  |
| 5,900.00                        | 90.30           | 3.19        | 3,602.10              | 2,434.10     | -338.90      | 2,446.55                | 0.00                    | 0.00                   | 0.00                  |
| 6,000.00                        | 90.30           | 3.19        | 3,601.59              | 2,533.95     | -333.33      | 2,546.06                | 0.00                    | 0.00                   | 0.00                  |
| 6,100.00                        | 90.30           | 3.19        | 3,601.07              | 2,633.79     | -327.76      | 2,645.56                | 0.00                    | 0.00                   | 0.00                  |
| 6,200.00                        | 90.30           | 3.19        | 3,600.56              | 2,733.63     | -322.19      | 2,745.07                | 0.00                    | 0.00                   | 0.00                  |
| 6,300.00                        | 90.30           | 3.19        | 3,600.04              | 2,833.48     | -316.62      | 2,844.57                | 0.00                    | 0.00                   | 0.00                  |
| 6,400.00                        | 90.30           | 3.19        | 3,599.53              | 2,933.32     | -311.05      | 2,944.08                | 0.00                    | 0.00                   | 0.00                  |
| 6,500.00                        | 90.30           | 3.19        | 3,599.01              | 3,033.16     | -305.48      | 3,043.59                | 0.00                    | 0.00                   | 0.00                  |
| 6,600.00                        | 90.30           | 3.19        | 3,598.49              | 3,133.01     | -299.91      | 3,143.09                | 0.00                    | 0.00                   | 0.00                  |
| 6,700.00                        | 90.30           | 3.19        | 3,597.98              | 3,232.85     | -294.34      | 3,242.60                | 0.00                    | 0.00                   | 0.00                  |
| 6,800.00                        | 90.30           | 3.19        | 3,597.46              | 3,332.69     | -288.77      | 3,342.11                | 0.00                    | 0.00                   | 0.00                  |
| 6,900.00                        | 90.30           | 3.19        | 3,596.95              | 3,432.54     | -283.20      | 3,441.61                | 0.00                    | 0.00                   | 0.00                  |
| 7,000.00                        | 90.30           | 3.19        | 3,596.43              | 3,532.38     | -277.63      | 3,541.12                | 0.00                    | 0.00                   | 0.00                  |
| 7,100.00                        | 90.30           | 3.19        | 3,595.91              | 3,632.22     | -272.06      | 3,640.62                | 0.00                    | 0.00                   | 0.00                  |
| 7,200.00                        | 90.30           | 3.19        | 3,595.40              | 3,732.07     | -266.49      | 3,740.13                | 0.00                    | 0.00                   | 0.00                  |



Phoenix Technology Services  
Planning Report



|           |                             |                              |                   |
|-----------|-----------------------------|------------------------------|-------------------|
| Database: | GCR/DB                      | Local Co-ordinate Reference: | Well #5H          |
| Company:  | COG Operating, LLC          | TVD Reference:               | GL @ 3350.00usft  |
| Project:  | Eddy County NM (NAD 27 NME) | MD Reference:                | GL @ 3350.00usft  |
| Site:     | Sherman 4 Fee               | North Reference:             | Grid              |
| Well:     | #5H                         | Survey Calculation Method:   | Minimum Curvature |
| Wellbore: | WB1                         |                              |                   |
| Design:   | Plan #1 03-17-14            |                              |                   |

| Planned Survey                       |                 |             |                       |              |              |                         |                         |                        |                       |  |
|--------------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|--|
| 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) |  |
| 7,300.00                             | 90.30           | 3.19        | 3,594.88              | 3,831.91     | -260.92      | 3,839.64                | 0.00                    | 0.00                   | 0.00                  |  |
| 7,400.00                             | 90.30           | 3.19        | 3,594.37              | 3,931.75     | -255.35      | 3,939.14                | 0.00                    | 0.00                   | 0.00                  |  |
| 7,500.00                             | 90.30           | 3.19        | 3,593.85              | 4,031.60     | -249.78      | 4,038.65                | 0.00                    | 0.00                   | 0.00                  |  |
| 7,600.00                             | 90.30           | 3.19        | 3,593.34              | 4,131.44     | -244.21      | 4,138.16                | 0.00                    | 0.00                   | 0.00                  |  |
| 7,700.00                             | 90.30           | 3.19        | 3,592.82              | 4,231.28     | -238.64      | 4,237.66                | 0.00                    | 0.00                   | 0.00                  |  |
| 7,800.00                             | 90.30           | 3.19        | 3,592.30              | 4,331.13     | -233.07      | 4,337.17                | 0.00                    | 0.00                   | 0.00                  |  |
| 7,900.00                             | 90.30           | 3.19        | 3,591.79              | 4,430.97     | -227.50      | 4,436.67                | 0.00                    | 0.00                   | 0.00                  |  |
| 8,000.00                             | 90.30           | 3.19        | 3,591.27              | 4,530.81     | -221.93      | 4,536.18                | 0.00                    | 0.00                   | 0.00                  |  |
| 8,100.00                             | 90.30           | 3.19        | 3,590.76              | 4,630.66     | -216.36      | 4,635.69                | 0.00                    | 0.00                   | 0.00                  |  |
| 8,200.00                             | 90.30           | 3.19        | 3,590.24              | 4,730.50     | -210.79      | 4,735.19                | 0.00                    | 0.00                   | 0.00                  |  |
| 8,246.57                             | 90.30           | 3.19        | 3,590.00              | 4,777.00     | -208.20      | 4,781.53                | 0.00                    | 0.00                   | 0.00                  |  |
| TD at 8246.57 PBHL-Sherman 4 Fee #5H |                 |             |                       |              |              |                         |                         |                        |                       |  |

| Design Targets       |                           |               |              |            |              |              |                 |                |          |                     |
|----------------------|---------------------------|---------------|--------------|------------|--------------|--------------|-----------------|----------------|----------|---------------------|
| Target Name          | hit/miss target           | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude | Longitude           |
| PBHL-Sherman 4 Fee # | - plan hits target center | 0.00          | 0.00         | 3,590.00   | 4,777.00     | -208.20      | 616,909.20      | 481,964.90     | 32.69597 | 104° 23' 31.05313 W |
|                      | - Point                   |               |              |            |              |              |                 |                |          |                     |
| PP-Sherman 4 Fee #5H | - plan hits target center | 0.00          | 360.00       | 3,608.41   | 413.00       | -192.59      | 612,545.20      | 481,980.52     | 32.68397 | 104° 23' 30.84220 W |
|                      | - Point                   |               |              |            |              |              |                 |                |          |                     |

| Measured Depth (usft) | Vertical Depth (usft) | Name                            | Lithology | Dip (°) | Dip Direction (°) |
|-----------------------|-----------------------|---------------------------------|-----------|---------|-------------------|
| 3,907.08              | 3,612.49              | TL, 3615' TVD @ 0 VZ, 90.3° Inc |           | -0.30   | 357.50            |

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |              | Comment                    |
|-----------------------|-----------------------|-------------------|--------------|----------------------------|
|                       |                       | +N/-S (usft)      | +E/-W (usft) |                            |
| 3,091.43              | 3,091.43              | 0.00              | 0.00         | KOP, 11°/100' Build        |
| 3,912.54              | 3,612.49              | 474.54            | -221.28      | LP, Begin 3°/100' Turn     |
| 4,852.29              | 3,607.51              | 1,388.03          | -397.25      | Hold 90.30° Inc, 3.19° Azm |
| 8,246.57              | 3,590.00              | 4,777.00          | -208.20      | TD at 8246.57              |



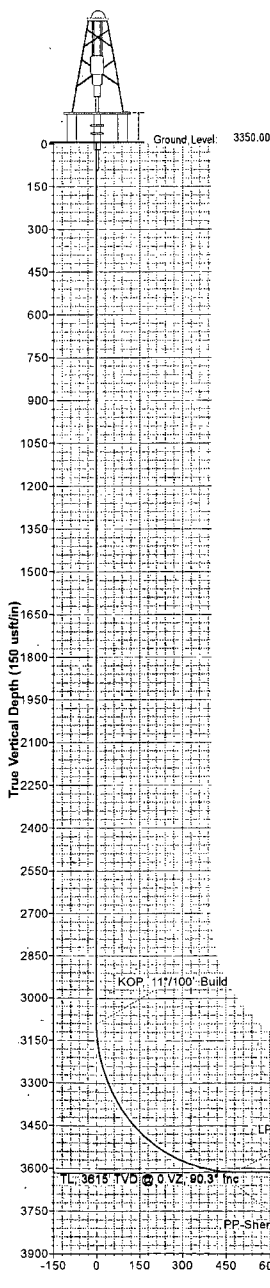
Project: Eddy County, NM (NAD 27 NME)  
Site: Sherman 4 Fee  
Well: #5H  
Wellbore: WB1  
Design: Plan #1 03-17-14



PHOENIX  
TECHNOLOGY SERVICES



Azimuths to Grid North  
True North: 0.03°  
Magnetic North: 7.69°  
Magnetic Field  
Strength: 48527.05nT  
Dip Angle: 60.40°  
Date: 03/17/2014  
Model: IGRF2010\_14



| WELL DETAILS |      |      |           |              |           |          |                     |  |  |
|--------------|------|------|-----------|--------------|-----------|----------|---------------------|--|--|
|              | +N-S | +E-W | Northing  | Ground Level | 3350.00   | Latitude | Longitude           |  |  |
|              | 0.00 | 0.00 | 612132.20 | Easting      | 482173.10 | 32.68284 | 104° 23' 28.58617 W |  |  |

| SECTION DETAILS |         |       |        |         |         |         |       |        |         |
|-----------------|---------|-------|--------|---------|---------|---------|-------|--------|---------|
| Sec             | MD      | Inc   | Azi    | TVD     | +N-S    | +E-W    | Dleg  | IFace  | VSecl   |
| 1               | 0.00    | 0.00  | 0.00   | 0.00    | 0.00    | 0.00    | 0.00  | 0.00   | 0.00    |
| 2               | 3091.63 | 0.00  | 0.00   | 3091.63 | 0.00    | 0.00    | 0.00  | 0.00   | 0.00    |
| 3               | 3912.54 | 90.30 | 335.00 | 3612.49 | 474.54  | -221.28 | 11.00 | 335.00 | 483.73  |
| 4               | 4852.28 | 90.30 | 3.19   | 3607.51 | 1388.03 | -387.25 | 3.00  | 89.93  | 1404.01 |
| 5               | 8246.57 | 90.30 | 3.19   | 3580.00 | 4777.00 | -208.20 | 0.00  | 0.00   | 4781.53 |

| DESIGN TARGET DETAILS  |         |         |         |           |           |          |                     |       |  |
|------------------------|---------|---------|---------|-----------|-----------|----------|---------------------|-------|--|
| Name                   | TVD     | +N-S    | +E-W    | Northing  | Easting   | Latitude | Longitude           | Shape |  |
| PBHL-Sherman 4 Fee #5H | 3590.00 | 4777.00 | -208.20 | 616909.20 | 481984.90 | 32.68597 | 104° 23' 31.05313 W | Point |  |
| PP-Sherman 4 Fee #5H   | 3608.41 | 413.00  | -192.59 | 612545.20 | 481980.51 | 32.68397 | 104° 23' 30.84220 W | Point |  |

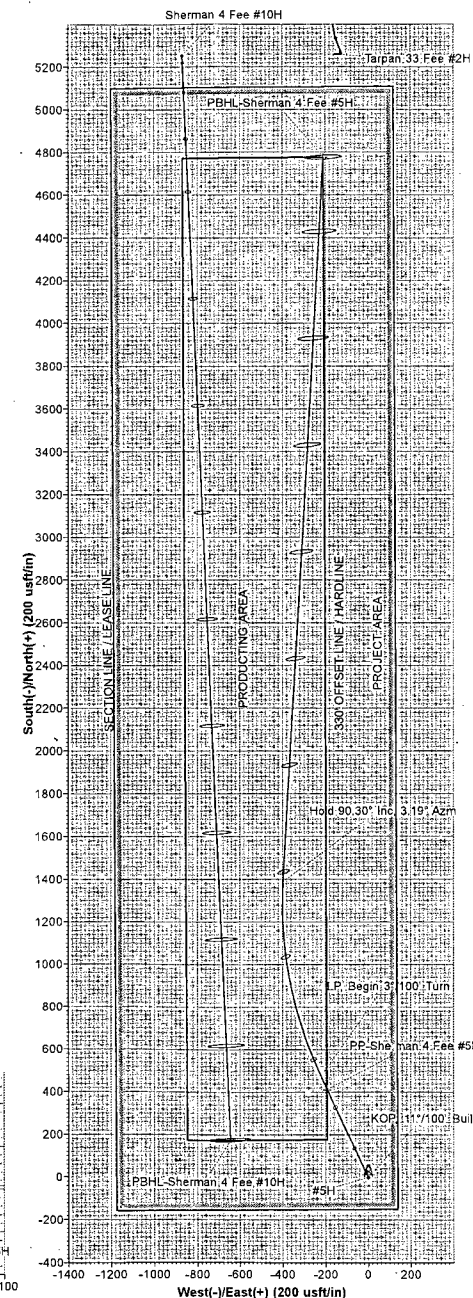
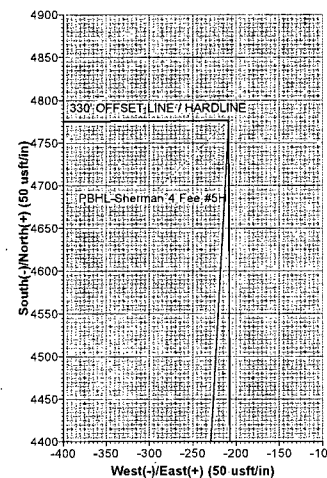
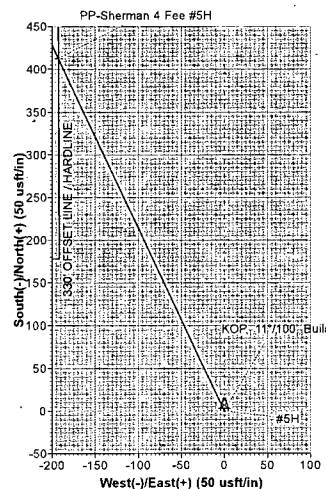
PROJECT DETAILS: Eddy County, NM (NAD 27 NME)  
Geodetic System: US State Plane 1927 (Exact solution)  
Datum: NAD 1927 (NADCON CONUS)  
Ellipsoid: Clarke 1866  
Zone: New Mexico East 3001  
System Datum: Mean Sea Level

SITE DETAILS: Sherman 4 Fee  
Site Centre Northing: 612151.80  
Easting: 485212.40  
Positional Uncertainty: 0.00  
Convergence: -0.03  
Local North: Grid

LEGEND  
#10H, WB1, Plan #1 02-26-14 V0  
#2H, WB1/Job #1410167, Surveys (Silver Oak 3) V0  
Plan #1 03-17-14

Map System: US State Plane 1927 (Exact solution)  
Datum: NAD 1927 (NADCON CONUS)  
Ellipsoid: Clarke 1866  
Zone Name: New Mexico East 3001  
Local Origin: Well #5H, Grid North  
Latitude: 32.68284  
Longitude: 104° 23' 28.58617 W  
Grid East: 482173.10  
Grid North: 612132.20  
Scale Factor: 1.000  
Geomagnetic Model: IGRF2010\_14  
Sample Date: 17-Mar-14  
Magnetic Declination: 7.66°  
Dip Angle from Horizontal: 60.40°  
Magnetic Field Strength: 48527  
To convert a Magnetic Direction to a Grid Direction, Add 7.66°  
To convert a Magnetic Direction to a True Direction, Add 7.66° East  
To convert a True Direction to a Grid Direction, Add 0.03°

FORMATION TOP DETAILS  
TVDPath MDPath Formation DipAngle DipDir  
3612.49 3607.08 TL 3615° TVD @ 0 VZ 90.3° Inc -0.30 337.50





## **COG Operating LLC**

Eddy County, NM (NAD 27 NME)

Sherman 4 Fee

#5H

WB1

Plan #1 03-17-14

## **Anticollision Report**

17 March, 2014





Phoenix Technology Services  
Anticollision Report



|                    |                               |                              |                   |
|--------------------|-------------------------------|------------------------------|-------------------|
| Company:           | COG Operating LLC             | Local Co-ordinate Reference: | Well #5H          |
| Project:           | Eddy County, NM (NAD:27, NME) | TVD Reference:               | GL @ 3350.00usft  |
| Reference Site:    | Sherman 4 Fee                 | MD Reference:                | GL @ 3350.00usft  |
| Site Error:        | 0.00 usft                     | North Reference:             | Grid              |
| Reference Well:    | #5H                           | Survey Calculation Method:   | Minimum Curvature |
| Well Error:        | 0.00 usft                     | Output errors are at         | 2.00 sigma        |
| Reference Wellbore | WB1                           | Database:                    | GCR DB            |
| Reference Design:  | Plan #1, 03-17-14             | Offset TVD Reference:        | Offset Datum      |

|                              |                                                                     |                |                     |
|------------------------------|---------------------------------------------------------------------|----------------|---------------------|
| Reference                    | Plan #1, 03-17-14                                                   |                |                     |
| Filter type:                 | NO GLOBAL FILTER: Using user defined selection & filtering criteria |                |                     |
| Interpolation Method:        | Stations                                                            | Error Model:   | ISCWSA              |
| Depth Range:                 | Unlimited                                                           | Scan Method:   | Closest Approach 3D |
| Results Limited by:          | Maximum center-center distance of 10,000.00 usft                    | Error Surface: | Circular Conic      |
| Warning Levels Evaluated at: | 2.00 Sigma                                                          | Casing Method: | Not applied         |

|                      |                |                        |                |
|----------------------|----------------|------------------------|----------------|
| Survey Tool Program: | Date: 03/17/14 |                        |                |
| From (usft)          | To (usft)      | Survey (Wellbore)      | Tool Name      |
| 0.00                 | 8,246.37       | Plan #1 03-17-14 (WB1) | MWD            |
|                      |                |                        | Description    |
|                      |                |                        | MWD - Standard |

|                                                 |                                 |                              |                                 |                                  |                   |         |
|-------------------------------------------------|---------------------------------|------------------------------|---------------------------------|----------------------------------|-------------------|---------|
| Summary                                         |                                 |                              |                                 |                                  |                   |         |
| Site Name                                       | Reference Measured Depth (usft) | Offset Measured Depth (usft) | Distance Between Centres (usft) | Distance Between Ellipses (usft) | Separation Factor | Warning |
| Offset Well - Wellbore - Design                 |                                 |                              |                                 |                                  |                   |         |
| Sherman 4 Fee                                   |                                 |                              |                                 |                                  |                   |         |
| #10H - WB1 - Plan #1 02-26-14                   | 4,600.00                        | 6,995.25                     | 621.34                          | 520.12                           | 6.139 SF          |         |
| #10H - WB1 - Plan #1 02-26-14                   | 4,680.46                        | 6,914.79                     | 620.54                          | 519.51                           | 6.142 CC, ES      |         |
| Tarpan 33 Fee                                   |                                 |                              |                                 |                                  |                   |         |
| #2H - WB1/Job #1410167 - Surveys (Silver Oak 3) | 8,246.57                        | 2,919.00                     | 1,015.80                        | 923.52                           | 11.009 CC, ES, SF |         |

|                                                           |                       |                              |                       |                         |                               |                       |                                   |                                   |                                 |                                  |                           |                   |
|-----------------------------------------------------------|-----------------------|------------------------------|-----------------------|-------------------------|-------------------------------|-----------------------|-----------------------------------|-----------------------------------|---------------------------------|----------------------------------|---------------------------|-------------------|
| Offset Design Sherman 4 Fee #10H - WB1 - Plan #1 02-26-14 |                       |                              |                       |                         |                               |                       |                                   |                                   |                                 |                                  |                           |                   |
| Survey Program: 0-MWD                                     |                       |                              |                       |                         |                               |                       |                                   |                                   |                                 |                                  |                           |                   |
| Reference Measured Depth (usft)                           | Vertical Depth (usft) | Offset Measured Depth (usft) | Vertical Depth (usft) | Reference Offset (usft) | Semi-Major Axis Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre N-S (usft) | Offset Wellbore Centre E-W (usft) | Distance Between Centres (usft) | Distance Between Ellipses (usft) | Minimum Separation (usft) | Separation Factor |
| 0.00                                                      | 0.00                  | 7,943.58                     | 3,085.00              | 0.00                    | 94.00                         | -74.79                | 175.60                            | -645.70                           | 3,133.29                        | 3,039.28                         | 94.00                     | 33.332            |
| 100.00                                                    | 100.00                | 7,943.58                     | 3,085.00              | 0.11                    | 94.00                         | -74.79                | 175.60                            | -645.70                           | 3,035.67                        | 2,941.55                         | 94.12                     | 32.255            |
| 200.00                                                    | 200.00                | 7,943.58                     | 3,085.00              | 0.34                    | 94.00                         | -74.79                | 175.60                            | -645.70                           | 2,938.21                        | 2,843.87                         | 94.34                     | 31.145            |
| 300.00                                                    | 300.00                | 7,943.58                     | 3,085.00              | 0.56                    | 94.00                         | -74.79                | 175.60                            | -645.70                           | 2,840.93                        | 2,746.36                         | 94.57                     | 30.042            |
| 400.00                                                    | 400.00                | 7,943.58                     | 3,085.00              | 0.79                    | 94.00                         | -74.79                | 175.60                            | -645.70                           | 2,743.84                        | 2,649.05                         | 94.79                     | 28.946            |
| 500.00                                                    | 500.00                | 7,943.58                     | 3,085.00              | 1.01                    | 94.00                         | -74.79                | 175.60                            | -645.70                           | 2,646.98                        | 2,551.96                         | 95.02                     | 27.858            |
| 600.00                                                    | 600.00                | 7,943.58                     | 3,085.00              | 1.24                    | 94.00                         | -74.79                | 175.60                            | -645.70                           | 2,550.35                        | 2,455.11                         | 95.24                     | 26.778            |
| 700.00                                                    | 700.00                | 7,943.58                     | 3,085.00              | 1.46                    | 94.00                         | -74.79                | 175.60                            | -645.70                           | 2,453.99                        | 2,358.53                         | 95.46                     | 25.706            |
| 800.00                                                    | 800.00                | 7,943.58                     | 3,085.00              | 1.69                    | 94.00                         | -74.79                | 175.60                            | -645.70                           | 2,357.94                        | 2,262.25                         | 95.69                     | 24.642            |
| 900.00                                                    | 900.00                | 7,943.58                     | 3,085.00              | 1.91                    | 94.00                         | -74.79                | 175.60                            | -645.70                           | 2,262.23                        | 2,166.32                         | 95.91                     | 23.586            |
| 1,000.00                                                  | 1,000.00              | 7,943.58                     | 3,085.00              | 2.14                    | 94.00                         | -74.79                | 175.60                            | -645.70                           | 2,166.91                        | 2,070.77                         | 96.14                     | 22.539            |
| 1,100.00                                                  | 1,100.00              | 7,943.58                     | 3,085.00              | 2.36                    | 94.00                         | -74.79                | 175.60                            | -645.70                           | 2,072.02                        | 1,975.66                         | 96.36                     | 21.502            |
| 1,200.00                                                  | 1,200.00              | 7,943.58                     | 3,085.00              | 2.58                    | 94.00                         | -74.79                | 175.60                            | -645.70                           | 1,977.65                        | 1,881.06                         | 96.59                     | 20.475            |
| 1,300.00                                                  | 1,300.00              | 7,943.58                     | 3,085.00              | 2.81                    | 94.00                         | -74.79                | 175.60                            | -645.70                           | 1,883.85                        | 1,787.04                         | 96.81                     | 19.459            |
| 1,400.00                                                  | 1,400.00              | 7,943.58                     | 3,085.00              | 3.03                    | 94.00                         | -74.79                | 175.60                            | -645.70                           | 1,790.72                        | 1,693.68                         | 97.04                     | 18.454            |
| 1,500.00                                                  | 1,500.00              | 7,943.58                     | 3,085.00              | 3.26                    | 94.00                         | -74.79                | 175.60                            | -645.70                           | 1,698.38                        | 1,601.11                         | 97.26                     | 17.462            |
| 1,600.00                                                  | 1,600.00              | 7,943.58                     | 3,085.00              | 3.48                    | 94.00                         | -74.79                | 175.60                            | -645.70                           | 1,606.95                        | 1,509.46                         | 97.49                     | 16.484            |
| 1,700.00                                                  | 1,700.00              | 7,943.58                     | 3,085.00              | 3.71                    | 94.00                         | -74.79                | 175.60                            | -645.70                           | 1,516.60                        | 1,418.89                         | 97.71                     | 15.521            |
| 1,800.00                                                  | 1,800.00              | 7,943.58                     | 3,085.00              | 3.93                    | 94.00                         | -74.79                | 175.60                            | -645.70                           | 1,427.55                        | 1,329.61                         | 97.94                     | 14.576            |
| 1,900.00                                                  | 1,900.00              | 7,943.58                     | 3,085.00              | 4.16                    | 94.00                         | -74.79                | 175.60                            | -645.70                           | 1,340.03                        | 1,241.87                         | 98.16                     | 13.651            |
| 2,000.00                                                  | 2,000.00              | 7,943.58                     | 3,085.00              | 4.38                    | 94.00                         | -74.79                | 175.60                            | -645.70                           | 1,254.39                        | 1,156.00                         | 98.39                     | 12.750            |
| 2,100.00                                                  | 2,100.00              | 7,943.58                     | 3,085.00              | 4.61                    | 94.00                         | -74.79                | 175.60                            | -645.70                           | 1,171.02                        | 1,072.41                         | 98.61                     | 11.875            |

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



Phoenix Technology Services  
Anticollision Report



|                     |                              |                              |                   |
|---------------------|------------------------------|------------------------------|-------------------|
| Company:            | COG Operating, LLC           | Local Co-ordinate Reference: | Well #5H          |
| Project:            | Eddy County, NM (NAD 27 NME) | TVD Reference:               | GL @ 3350.00usft  |
| Reference Site:     | Sherman 4/Fee                | MD Reference:                | GL @ 3350.00usft  |
| Site Error:         | 0.00 usft                    | North Reference:             | Grid              |
| Reference Well:     | #5H                          | Survey Calculation Method:   | Minimum Curvature |
| Well Error:         | 0.00 usft                    | Output errors are at         | 2.00 sigma        |
| Reference Wellbore: | WB1                          | Database:                    | CCR-DB            |
| Reference Design:   | Plan #1 03-17-14             | Offset TVD Reference:        | Offset Datum      |

| Offset Design Sherman 4/Fee - #10H - WB1 - Plan #1 02-26-14 |                       |                       |                       |                  |               |                       |                                   |                                   |                        |                         |                           |                   | Offset Site Error: | 0.00 usft |
|-------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-----------------------------------|-----------------------------------|------------------------|-------------------------|---------------------------|-------------------|--------------------|-----------|
| Survey Program: 0-MWD                                       |                       |                       |                       |                  |               |                       |                                   |                                   |                        |                         |                           |                   | Offset Well Error: | 0.00 usft |
| Reference                                                   | Offset                | Semi Major Axis       |                       | Distance         |               | Minimum               |                                   | Separation                        |                        | Warning                 |                           |                   |                    |           |
| Measured Depth (usft)                                       | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre N/S (usft) | Offset Wellbore Centre E/W (usft) | Between Centres (usft) | Between Ellipses (usft) | Minimum Separation (usft) | Separation Factor |                    |           |
| 2,200.00                                                    | 2,200.00              | 7,943.58              | 3,085.00              | 4.83             | 94.00         | -74.79                | 175.60                            | -645.70                           | 1,090.45               | 991.62                  | 98.84                     | 11.033            |                    |           |
| 2,300.00                                                    | 2,300.00              | 7,943.58              | 3,085.00              | 5.06             | 94.00         | -74.79                | 175.60                            | -645.70                           | 1,013.35               | 914.29                  | 99.06                     | 10.230            |                    |           |
| 2,400.00                                                    | 2,400.00              | 7,943.58              | 3,085.00              | 5.28             | 94.00         | -74.79                | 175.60                            | -645.70                           | 940.58                 | 841.29                  | 99.29                     | 9.473             |                    |           |
| 2,500.00                                                    | 2,500.00              | 7,943.58              | 3,085.00              | 5.51             | 94.00         | -74.79                | 175.60                            | -645.70                           | 873.20                 | 773.69                  | 99.51                     | 8.775             |                    |           |
| 2,600.00                                                    | 2,600.00              | 7,943.58              | 3,085.00              | 5.73             | 94.00         | -74.79                | 175.60                            | -645.70                           | 812.58                 | 712.84                  | 99.74                     | 8.147             |                    |           |
| 2,700.00                                                    | 2,700.00              | 7,943.58              | 3,085.00              | 5.96             | 94.00         | -74.79                | 175.60                            | -645.70                           | 760.32                 | 660.36                  | 99.96                     | 7.606             |                    |           |
| 2,800.00                                                    | 2,800.00              | 7,943.58              | 3,085.00              | 6.18             | 94.00         | -74.79                | 175.60                            | -645.70                           | 718.25                 | 618.07                  | 100.18                    | 7.169             |                    |           |
| 2,900.00                                                    | 2,900.00              | 7,943.58              | 3,085.00              | 6.41             | 94.00         | -74.79                | 175.60                            | -645.70                           | 688.25                 | 587.84                  | 100.41                    | 6.854             |                    |           |
| 3,000.00                                                    | 3,000.00              | 7,943.58              | 3,085.00              | 6.63             | 94.00         | -74.79                | 175.60                            | -645.70                           | 671.93                 | 571.29                  | 100.63                    | 6.677             |                    |           |
| 3,061.00                                                    | 3,061.00              | 7,943.58              | 3,085.00              | 6.77             | 94.00         | -74.79                | 175.60                            | -645.70                           | 669.15                 | 568.38                  | 100.77                    | 6.640             |                    |           |
| 3,091.63                                                    | 3,091.63              | 7,943.58              | 3,085.00              | 6.84             | 94.00         | -74.79                | 175.60                            | -645.70                           | 669.85                 | 569.01                  | 100.84                    | 6.643             |                    |           |
| 3,100.00                                                    | 3,100.00              | 7,943.58              | 3,085.00              | 6.86             | 94.00         | -49.75                | 175.60                            | -645.70                           | 670.24                 | 569.38                  | 100.86                    | 6.645             |                    |           |
| 3,150.00                                                    | 3,149.88              | 7,943.58              | 3,085.00              | 6.97             | 94.00         | -49.53                | 175.60                            | -645.70                           | 672.94                 | 571.97                  | 100.97                    | 6.665             |                    |           |
| 3,200.00                                                    | 3,199.22              | 7,943.58              | 3,085.00              | 7.09             | 94.00         | -49.25                | 175.60                            | -645.70                           | 676.23                 | 575.14                  | 101.09                    | 6.689             |                    |           |
| 3,250.00                                                    | 3,247.57              | 7,943.58              | 3,085.00              | 7.21             | 94.00         | -48.93                | 175.60                            | -645.70                           | 680.07                 | 578.86                  | 101.22                    | 6.719             |                    |           |
| 3,300.00                                                    | 3,294.49              | 7,943.58              | 3,085.00              | 7.34             | 94.00         | -48.57                | 175.60                            | -645.70                           | 684.42                 | 583.08                  | 101.34                    | 6.754             |                    |           |
| 3,350.00                                                    | 3,339.53              | 7,943.58              | 3,085.00              | 7.47             | 94.00         | -48.17                | 175.60                            | -645.70                           | 689.23                 | 587.76                  | 101.48                    | 6.792             |                    |           |
| 3,400.00                                                    | 3,382.30              | 7,943.58              | 3,085.00              | 7.64             | 94.00         | -47.74                | 175.60                            | -645.70                           | 694.45                 | 592.80                  | 101.65                    | 6.832             |                    |           |
| 3,450.00                                                    | 3,422.39              | 7,943.58              | 3,085.00              | 7.86             | 94.00         | -47.29                | 175.60                            | -645.70                           | 700.01                 | 598.15                  | 101.87                    | 6.872             |                    |           |
| 3,500.00                                                    | 3,459.43              | 7,943.58              | 3,085.00              | 8.14             | 94.00         | -46.82                | 175.60                            | -645.70                           | 705.87                 | 603.72                  | 102.14                    | 6.910             |                    |           |
| 3,550.00                                                    | 3,493.09              | 7,943.58              | 3,085.00              | 8.49             | 94.00         | -46.33                | 175.60                            | -645.70                           | 711.95                 | 609.46                  | 102.49                    | 6.947             |                    |           |
| 3,600.00                                                    | 3,523.05              | 7,935.87              | 3,085.00              | 8.91             | 93.86         | -45.43                | 183.31                            | -646.04                           | 718.16                 | 615.39                  | 102.77                    | 6.988             |                    |           |
| 3,650.00                                                    | 3,549.04              | 7,896.42              | 3,085.00              | 9.41             | 93.13         | -43.14                | 222.72                            | -647.78                           | 723.03                 | 620.49                  | 102.55                    | 7.051             |                    |           |
| 3,700.00                                                    | 3,570.81              | 7,854.85              | 3,085.00              | 9.99             | 92.37         | -41.13                | 264.25                            | -649.61                           | 725.57                 | 623.21                  | 102.36                    | 7.088             |                    |           |
| 3,750.00                                                    | 3,588.18              | 7,811.54              | 3,085.00              | 10.65            | 91.57         | -39.43                | 307.52                            | -651.52                           | 725.45                 | 623.23                  | 102.22                    | 7.097             |                    |           |
| 3,800.00                                                    | 3,600.97              | 7,766.89              | 3,085.00              | 11.37            | 90.74         | -38.06                | 352.12                            | -653.49                           | 722.40                 | 620.28                  | 102.12                    | 7.074             |                    |           |
| 3,850.00                                                    | 3,609.07              | 7,721.32              | 3,085.00              | 12.15            | 89.90         | -37.03                | 397.65                            | -655.50                           | 716.20                 | 614.14                  | 102.05                    | 7.018             |                    |           |
| 3,900.00                                                    | 3,612.41              | 7,675.24              | 3,085.00              | 12.97            | 89.05         | -36.37                | 443.69                            | -657.53                           | 706.68                 | 604.66                  | 102.02                    | 6.927             |                    |           |
| 3,912.54                                                    | 3,612.49              | 7,663.65              | 3,085.00              | 13.18            | 88.84         | -36.27                | 455.26                            | -658.04                           | 703.76                 | 601.74                  | 102.02                    | 6.898             |                    |           |
| 4,000.00                                                    | 3,612.03              | 7,582.09              | 3,085.00              | 14.63            | 87.34         | -34.73                | 536.74                            | -661.64                           | 684.23                 | 582.26                  | 101.97                    | 6.710             |                    |           |
| 4,100.00                                                    | 3,611.50              | 7,487.19              | 3,085.00              | 16.30            | 85.58         | -33.07                | 631.55                            | -665.82                           | 665.61                 | 563.73                  | 101.88                    | 6.533             |                    |           |
| 4,200.00                                                    | 3,610.97              | 7,390.77              | 3,085.00              | 17.99            | 83.81         | -31.56                | 727.88                            | -670.08                           | 650.65                 | 548.85                  | 101.80                    | 6.391             |                    |           |
| 4,300.00                                                    | 3,610.43              | 7,293.10              | 3,085.00              | 19.70            | 82.01         | -30.27                | 825.46                            | -674.38                           | 639.02                 | 537.31                  | 101.70                    | 6.283             |                    |           |
| 4,400.00                                                    | 3,609.90              | 7,194.44              | 3,085.00              | 21.39            | 80.19         | -29.24                | 924.02                            | -678.73                           | 630.41                 | 528.83                  | 101.58                    | 6.206             |                    |           |
| 4,500.00                                                    | 3,609.36              | 7,095.06              | 3,085.00              | 23.06            | 78.36         | -28.52                | 1,023.30                          | -683.12                           | 624.58                 | 523.16                  | 101.42                    | 6.158             |                    |           |
| 4,600.00                                                    | 3,608.83              | 6,995.25              | 3,085.00              | 24.70            | 76.52         | -28.14                | 1,123.02                          | -687.52                           | 621.34                 | 520.12                  | 101.22                    | 6.139 SF          |                    |           |
| 4,680.46                                                    | 3,608.41              | 6,914.79              | 3,085.00              | 25.99            | 75.03         | -28.10                | 1,203.39                          | -691.07                           | 620.54                 | 519.51                  | 101.03                    | 6.142 CC, ES      |                    |           |
| 4,700.00                                                    | 3,608.30              | 6,895.26              | 3,085.00              | 26.31            | 74.67         | -28.12                | 1,222.90                          | -691.93                           | 620.58                 | 519.60                  | 100.98                    | 6.145             |                    |           |
| 4,800.00                                                    | 3,607.78              | 6,795.38              | 3,085.00              | 27.88            | 72.83         | -28.46                | 1,322.69                          | -696.33                           | 622.32                 | 521.61                  | 100.71                    | 6.179             |                    |           |
| 4,852.29                                                    | 3,607.51              | 6,743.29              | 3,085.00              | 28.68            | 71.87         | -28.77                | 1,374.73                          | -698.63                           | 624.24                 | 523.68                  | 100.56                    | 6.208             |                    |           |
| 4,900.00                                                    | 3,607.26              | 6,695.81              | 3,085.00              | 29.41            | 71.00         | -29.16                | 1,422.16                          | -700.72                           | 626.34                 | 525.93                  | 100.41                    | 6.238             |                    |           |
| 5,000.00                                                    | 3,606.75              | 6,596.31              | 3,085.00              | 30.93            | 69.17         | -29.97                | 1,521.56                          | -705.11                           | 630.83                 | 530.73                  | 100.09                    | 6.302             |                    |           |
| 5,100.00                                                    | 3,606.23              | 6,496.81              | 3,085.00              | 32.48            | 67.34         | -30.77                | 1,620.96                          | -709.50                           | 635.44                 | 535.63                  | 99.81                     | 6.366             |                    |           |
| 5,200.00                                                    | 3,605.72              | 6,397.31              | 3,085.00              | 34.05            | 65.50         | -31.56                | 1,720.37                          | -713.88                           | 640.18                 | 540.63                  | 99.55                     | 6.430             |                    |           |
| 5,300.00                                                    | 3,605.20              | 6,297.81              | 3,085.00              | 35.65            | 63.67         | -32.33                | 1,819.77                          | -718.27                           | 645.04                 | 545.72                  | 99.32                     | 6.495             |                    |           |
| 5,400.00                                                    | 3,604.68              | 6,198.31              | 3,085.00              | 37.26            | 61.84         | -33.10                | 1,919.18                          | -722.66                           | 650.01                 | 550.90                  | 99.11                     | 6.559             |                    |           |
| 5,500.00                                                    | 3,604.17              | 6,098.81              | 3,085.00              | 38.90            | 60.01         | -33.85                | 2,018.58                          | -727.05                           | 655.10                 | 556.19                  | 98.91                     | 6.623             |                    |           |
| 5,600.00                                                    | 3,603.65              | 5,999.31              | 3,085.00              | 40.55            | 58.18         | -34.59                | 2,117.98                          | -731.43                           | 660.30                 | 561.57                  | 98.73                     | 6.688             |                    |           |
| 5,700.00                                                    | 3,603.14              | 5,899.81              | 3,085.00              | 42.21            | 56.36         | -35.32                | 2,217.39                          | -735.82                           | 665.61                 | 567.04                  | 98.57                     | 6.753             |                    |           |
| 5,800.00                                                    | 3,602.62              | 5,800.31              | 3,085.00              | 43.89            | 54.53         | -36.03                | 2,316.79                          | -740.21                           | 671.02                 | 572.61                  | 98.42                     | 6.818             |                    |           |
| 5,900.00                                                    | 3,602.10              | 5,700.81              | 3,085.00              | 45.57            | 52.70         | -36.74                | 2,416.20                          | -744.60                           | 676.54                 | 578.27                  | 98.28                     | 6.884             |                    |           |
| 6,000.00                                                    | 3,601.59              | 5,601.31              | 3,085.00              | 47.27            | 50.88         | -37.43                | 2,515.60                          | -748.98                           | 682.16                 | 584.01                  | 98.15                     | 6.950             |                    |           |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Phoenix Technology Services  
Anticollision Report



|                     |                              |                              |                   |
|---------------------|------------------------------|------------------------------|-------------------|
| Company:            | COG Operating, LLC           | Local Co-ordinate Reference: | Well #5H          |
| Project:            | Eddy County, NM (NAD 27 NME) | TVD Reference:               | GL @ 3350.00usft  |
| Reference Site:     | Sherman 4 Fee                | MD Reference:                | GL @ 3350.00usft  |
| Site Error:         | 0.00 usft                    | North Reference:             | Grid              |
| Reference Well:     | #5H                          | Survey Calculation Method:   | Minimum Curvature |
| Well Error:         | 0.00 usft                    | Output errors are at         | 2.00 sigma        |
| Reference Wellbore: | WB1                          | Database:                    | GCR-DB            |
| Reference Design:   | Plan #1, 03-17-14            | Offset TVD Reference:        | Offset Datum      |

|                                                               |                 |                 |                 |                     |                  |                             |                        |               |                              |                               |                       |                      |           |
|---------------------------------------------------------------|-----------------|-----------------|-----------------|---------------------|------------------|-----------------------------|------------------------|---------------|------------------------------|-------------------------------|-----------------------|----------------------|-----------|
| Offset Design: Sherman 4 Fee - #10H - WB1 - Plan #1, 02-26-14 |                 |                 |                 |                     |                  |                             |                        |               |                              |                               |                       | Offset Site Error:   | 0.00 usft |
| Survey Program: 0-MWD                                         |                 |                 |                 |                     |                  |                             |                        |               |                              |                               |                       | Offset Well Error:   | 0.00 usft |
| Reference                                                     |                 |                 |                 |                     |                  |                             |                        |               |                              |                               |                       |                      |           |
| Measured                                                      |                 | Offset          |                 | Semi Major Axis     |                  | Highside<br>Toolface<br>(°) | Offset Wellbore Centre |               | Distance                     |                               | Minimum<br>Separation | Separation<br>Factor | Warning   |
| Depth<br>(usft)                                               | Depth<br>(usft) | Depth<br>(usft) | Depth<br>(usft) | Reference<br>(usft) | Offset<br>(usft) |                             | N/S<br>(usft)          | E/W<br>(usft) | Between<br>Centres<br>(usft) | Between<br>Ellipses<br>(usft) |                       |                      |           |
| 6,100.00                                                      | 3,601.07        | 5,501.81        | 3,085.00        | 48.97               | 49.05            | -38.12                      | 2,615.00               | -753.37       | 687.88                       | 589.85                        | 98.03                 | 7.017                |           |
| 6,200.00                                                      | 3,600.56        | 5,402.31        | 3,085.00        | 50.69               | 47.23            | -38.79                      | 2,714.41               | -757.76       | 693.70                       | 595.78                        | 97.92                 | 7.085                |           |
| 6,300.00                                                      | 3,600.04        | 5,302.80        | 3,085.00        | 52.41               | 45.41            | -39.45                      | 2,813.81               | -762.15       | 699.61                       | 601.79                        | 97.81                 | 7.152                |           |
| 6,400.00                                                      | 3,599.53        | 5,203.30        | 3,085.00        | 54.13               | 43.59            | -40.10                      | 2,913.21               | -766.53       | 705.61                       | 607.89                        | 97.72                 | 7.221                |           |
| 6,500.00                                                      | 3,599.01        | 5,103.80        | 3,085.00        | 55.87               | 41.77            | -40.74                      | 3,012.62               | -770.92       | 711.70                       | 614.06                        | 97.64                 | 7.289                |           |
| 6,600.00                                                      | 3,598.49        | 5,004.30        | 3,085.00        | 57.60               | 39.95            | -41.37                      | 3,112.02               | -775.31       | 717.88                       | 620.32                        | 97.56                 | 7.359                |           |
| 6,700.00                                                      | 3,597.98        | 4,904.80        | 3,085.00        | 59.35               | 38.14            | -41.98                      | 3,211.43               | -779.70       | 724.14                       | 626.65                        | 97.49                 | 7.428                |           |
| 6,800.00                                                      | 3,597.46        | 4,805.30        | 3,085.00        | 61.09               | 36.33            | -42.59                      | 3,310.83               | -784.08       | 730.48                       | 633.06                        | 97.42                 | 7.498                |           |
| 6,900.00                                                      | 3,596.95        | 4,705.80        | 3,085.00        | 62.84               | 34.52            | -43.18                      | 3,410.23               | -788.47       | 736.91                       | 639.55                        | 97.36                 | 7.569                |           |
| 7,000.00                                                      | 3,596.43        | 4,606.30        | 3,085.00        | 64.60               | 32.71            | -43.77                      | 3,509.64               | -792.86       | 743.41                       | 646.10                        | 97.31                 | 7.639                |           |
| 7,100.00                                                      | 3,595.91        | 4,506.80        | 3,085.00        | 66.36               | 30.91            | -44.35                      | 3,609.04               | -797.25       | 749.99                       | 652.72                        | 97.27                 | 7.710                |           |
| 7,200.00                                                      | 3,595.40        | 4,407.30        | 3,085.00        | 68.12               | 29.12            | -44.91                      | 3,708.45               | -801.63       | 756.65                       | 659.41                        | 97.24                 | 7.781                |           |
| 7,300.00                                                      | 3,594.88        | 4,307.80        | 3,085.00        | 69.88               | 27.33            | -45.47                      | 3,807.85               | -806.02       | 763.38                       | 666.16                        | 97.21                 | 7.853                |           |
| 7,400.00                                                      | 3,594.37        | 4,208.30        | 3,085.00        | 71.65               | 25.55            | -46.01                      | 3,907.25               | -810.41       | 770.18                       | 672.98                        | 97.20                 | 7.924                |           |
| 7,500.00                                                      | 3,593.85        | 4,108.80        | 3,085.00        | 73.42               | 23.77            | -46.55                      | 4,006.66               | -814.80       | 777.04                       | 679.85                        | 97.19                 | 7.995                |           |
| 7,600.00                                                      | 3,593.34        | 4,009.29        | 3,085.00        | 75.19               | 22.01            | -47.07                      | 4,106.06               | -819.18       | 783.98                       | 686.77                        | 97.20                 | 8.065                |           |
| 7,700.00                                                      | 3,592.82        | 3,909.79        | 3,085.00        | 76.97               | 20.26            | -47.59                      | 4,205.47               | -823.57       | 790.97                       | 693.74                        | 97.23                 | 8.135                |           |
| 7,800.00                                                      | 3,592.30        | 3,810.29        | 3,085.00        | 78.74               | 18.53            | -48.10                      | 4,304.87               | -827.96       | 798.04                       | 700.76                        | 97.28                 | 8.204                |           |
| 7,900.00                                                      | 3,591.79        | 3,710.79        | 3,085.00        | 80.52               | 16.83            | -48.60                      | 4,404.27               | -832.35       | 805.16                       | 707.81                        | 97.35                 | 8.271                |           |
| 8,000.00                                                      | 3,591.27        | 3,611.29        | 3,085.00        | 82.30               | 15.15            | -49.09                      | 4,503.68               | -836.73       | 812.35                       | 714.89                        | 97.45                 | 8.336                |           |
| 8,100.00                                                      | 3,590.76        | 3,511.79        | 3,085.00        | 84.08               | 13.52            | -49.57                      | 4,603.08               | -841.12       | 819.59                       | 721.99                        | 97.60                 | 8.397                |           |
| 8,200.00                                                      | 3,590.24        | 3,412.29        | 3,085.00        | 85.87               | 11.95            | -50.05                      | 4,702.49               | -845.51       | 826.89                       | 729.07                        | 97.81                 | 8.454                |           |
| 8,246.57                                                      | 3,590.00        | 3,382.31        | 3,085.00        | 86.70               | 11.49            | -50.19                      | 4,732.44               | -846.83       | 830.47                       | 732.29                        | 98.18                 | 8.458                |           |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Phoenix Technology Services  
Anticollision Report



|                    |                              |                              |                   |
|--------------------|------------------------------|------------------------------|-------------------|
| Company:           | COG Operating LLC            | Local Co-ordinate Reference: | Well #5H          |
| Project:           | Eddy County, NM (NAD 27 NME) | TVD Reference:               | GL @ 3350.00usft  |
| Reference Site:    | Sherman 4 Fee                | MD Reference:                | GL @ 3350.00usft  |
| Site Error:        | 0.00 usft                    | North Reference:             | Grid              |
| Reference Well:    | #5H                          | Survey Calculation Method:   | Minimum Curvature |
| Well Error:        | 0.00 usft                    | Output errors are at         | 2.00 sigma        |
| Reference Wellbore | WB1                          | Database:                    | GCR-DB            |
| Reference Design:  | Plan #1 03-17-14             | Offset TVD Reference:        | Offset Datum      |

| Offset Design: Tarpan 33 Fee - #2H - WB1/Job #1410167 - Surveys (Silver Oak 3) |                       |                       |                       |                  |               |                        |                       |                                   |                                   |                                 |                                  |                           | Offset Site Error: | 0.00 usft |
|--------------------------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|------------------------|-----------------------|-----------------------------------|-----------------------------------|---------------------------------|----------------------------------|---------------------------|--------------------|-----------|
| Survey Program: 100 VES, ISCWSA-GYRO-3 2451-MWD                                |                       |                       |                       |                  |               |                        |                       |                                   |                                   |                                 |                                  |                           | Offset Well Error: | 0.00 usft |
| Measured Depth (usft)                                                          | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Semi Major Axis (usft) | Highside Toolface (°) | Offset Wellbore Centre N/S (usft) | Offset Wellbore Centre E/W (usft) | Distance Between Centres (usft) | Distance Between Ellipses (usft) | Minimum Separation (usft) | Separation Factor  | Warning   |
| 0.00                                                                           | 0.00                  | 26.05                 | 26.05                 | 0.00             | 0.02          | -1.74                  |                       | 5,257.25                          | -160.00                           | 5,259.72                        |                                  |                           |                    |           |
| 100.00                                                                         | 100.00                | 100.00                | 100.00                | 0.11             | 0.08          | -1.74                  |                       | 5,257.93                          | -159.94                           | 5,260.56                        | 5,260.37                         | 0.19                      | N/A                |           |
| 200.00                                                                         | 200.00                | 188.67                | 188.66                | 0.34             | 0.25          | -1.74                  |                       | 5,259.07                          | -159.73                           | 5,261.80                        | 5,261.22                         | 0.58                      | 9,002.549          |           |
| 300.00                                                                         | 300.00                | 285.80                | 285.78                | 0.56             | 0.43          | -1.73                  |                       | 5,260.14                          | -159.33                           | 5,262.89                        | 5,261.91                         | 0.99                      | 5,318.150          |           |
| 400.00                                                                         | 400.00                | 409.08                | 409.05                | 0.79             | 0.66          | -1.73                  |                       | 5,261.34                          | -158.55                           | 5,263.86                        | 5,262.41                         | 1.44                      | 3,647.226          |           |
| 500.00                                                                         | 500.00                | 524.52                | 524.49                | 1.01             | 0.87          | -1.71                  |                       | 5,261.98                          | -157.27                           | 5,264.37                        | 5,262.49                         | 1.88                      | 2,801.813          |           |
| 600.00                                                                         | 600.00                | 624.17                | 624.11                | 1.24             | 1.05          | -1.69                  |                       | 5,262.46                          | -154.93                           | 5,264.79                        | 5,262.50                         | 2.29                      | 2,303.688          |           |
| 700.00                                                                         | 700.00                | 732.67                | 732.54                | 1.46             | 1.25          | -1.65                  |                       | 5,262.98                          | -151.33                           | 5,265.17                        | 5,262.46                         | 2.71                      | 1,943.700          |           |
| 800.00                                                                         | 800.00                | 849.72                | 849.53                | 1.69             | 1.46          | -1.61                  |                       | 5,263.14                          | -147.74                           | 5,265.21                        | 5,262.06                         | 3.15                      | 1,672.700          |           |
| 900.00                                                                         | 900.00                | 953.94                | 953.72                | 1.91             | 1.65          | -1.58                  |                       | 5,263.10                          | -144.90                           | 5,265.10                        | 5,261.54                         | 3.56                      | 1,477.458          |           |
| 1,000.00                                                                       | 1,000.00              | 1,055.38              | 1,055.13              | 2.14             | 1.84          | -1.55                  |                       | 5,263.00                          | -142.48                           | 5,264.93                        | 5,260.96                         | 3.98                      | 1,324.473          |           |
| 1,100.00                                                                       | 1,100.00              | 1,151.31              | 1,151.04              | 2.36             | 2.02          | -1.53                  |                       | 5,262.90                          | -140.49                           | 5,264.78                        | 5,260.40                         | 4.38                      | 1,202.771          |           |
| 1,164.00                                                                       | 1,164.00              | 1,210.28              | 1,209.99              | 2.50             | 2.13          | -1.52                  |                       | 5,262.90                          | -139.35                           | 5,264.75                        | 5,260.12                         | 4.63                      | 1,136.979          |           |
| 1,200.00                                                                       | 1,200.00              | 1,242.61              | 1,242.32              | 2.58             | 2.19          | -1.51                  |                       | 5,262.93                          | -138.77                           | 5,264.76                        | 5,259.99                         | 4.77                      | 1,103.335          |           |
| 1,300.00                                                                       | 1,300.00              | 1,334.92              | 1,334.62              | 2.81             | 2.36          | -1.49                  |                       | 5,263.12                          | -137.26                           | 5,264.92                        | 5,259.75                         | 5.17                      | 1,018.579          |           |
| 1,400.00                                                                       | 1,400.00              | 1,434.35              | 1,434.04              | 3.03             | 2.55          | -1.48                  |                       | 5,263.40                          | -135.73                           | 5,265.16                        | 5,259.58                         | 5.58                      | 943.594            |           |
| 1,500.00                                                                       | 1,500.00              | 1,546.21              | 1,545.88              | 3.26             | 2.75          | -1.46                  |                       | 5,263.60                          | -134.19                           | 5,265.31                        | 5,259.30                         | 6.01                      | 875.556            |           |
| 1,600.00                                                                       | 1,600.00              | 1,650.58              | 1,650.25              | 3.48             | 2.95          | -1.45                  |                       | 5,263.52                          | -132.92                           | 5,265.20                        | 5,258.76                         | 6.43                      | 818.493            |           |
| 1,641.10                                                                       | 1,641.10              | 1,687.43              | 1,687.10              | 3.58             | 3.02          | -1.44                  |                       | 5,263.51                          | -132.42                           | 5,265.18                        | 5,258.59                         | 6.59                      | 798.502            |           |
| 1,700.00                                                                       | 1,700.00              | 1,744.46              | 1,744.12              | 3.71             | 3.12          | -1.43                  |                       | 5,263.55                          | -131.62                           | 5,265.20                        | 5,258.36                         | 6.83                      | 770.574            |           |
| 1,800.00                                                                       | 1,800.00              | 1,841.57              | 1,841.22              | 3.93             | 3.31          | -1.42                  |                       | 5,263.63                          | -130.32                           | 5,265.25                        | 5,258.01                         | 7.24                      | 727.297            |           |
| 1,900.00                                                                       | 1,900.00              | 1,939.40              | 1,939.05              | 4.16             | 3.49          | -1.41                  |                       | 5,263.79                          | -129.14                           | 5,265.38                        | 5,257.73                         | 7.65                      | 688.491            |           |
| 2,000.00                                                                       | 2,000.00              | 2,036.51              | 2,036.15              | 4.38             | 3.67          | -1.39                  |                       | 5,263.94                          | -128.10                           | 5,265.51                        | 5,257.45                         | 8.05                      | 653.718            |           |
| 2,100.00                                                                       | 2,100.00              | 2,132.06              | 2,131.69              | 4.61             | 3.85          | -1.38                  |                       | 5,264.23                          | -127.12                           | 5,265.78                        | 5,257.32                         | 8.46                      | 622.518            |           |
| 2,200.00                                                                       | 2,200.00              | 2,237.76              | 2,237.39              | 4.83             | 4.05          | -1.37                  |                       | 5,264.44                          | -126.09                           | 5,265.96                        | 5,257.08                         | 8.88                      | 592.878            |           |
| 2,300.00                                                                       | 2,300.00              | 2,335.10              | 2,334.73              | 5.06             | 4.23          | -1.37                  |                       | 5,264.66                          | -125.45                           | 5,266.16                        | 5,256.87                         | 9.29                      | 566.896            |           |
| 2,400.00                                                                       | 2,400.00              | 2,439.91              | 2,439.53              | 5.28             | 4.39          | -1.36                  |                       | 5,264.86                          | -124.92                           | 5,266.35                        | 5,256.67                         | 9.67                      | 544.416            |           |
| 2,500.00                                                                       | 2,500.00              | 2,513.00              | 2,512.62              | 5.51             | 4.41          | -1.35                  |                       | 5,265.03                          | -124.48                           | 5,266.60                        | 5,256.69                         | 9.91                      | 531.328            |           |
| 2,600.00                                                                       | 2,600.00              | 2,513.00              | 2,512.62              | 5.73             | 4.41          | -1.35                  |                       | 5,265.03                          | -124.48                           | 5,266.19                        | 5,258.05                         | 10.14                     | 519.703            |           |
| 2,700.00                                                                       | 2,700.00              | 2,513.00              | 2,512.62              | 5.96             | 4.41          | -1.35                  |                       | 5,265.03                          | -124.48                           | 5,271.67                        | 5,261.31                         | 10.36                     | 508.765            |           |
| 2,800.00                                                                       | 2,800.00              | 2,545.00              | 2,544.57              | 6.18             | 4.41          | -1.36                  |                       | 5,266.63                          | -124.84                           | 5,276.73                        | 5,266.14                         | 10.59                     | 498.287            |           |
| 2,900.00                                                                       | 2,900.00              | 2,545.00              | 2,544.57              | 6.41             | 4.41          | -1.36                  |                       | 5,266.63                          | -124.84                           | 5,283.39                        | 5,272.57                         | 10.81                     | 488.546            |           |
| 3,000.00                                                                       | 3,000.00              | 2,545.00              | 2,544.57              | 6.63             | 4.41          | -1.36                  |                       | 5,266.63                          | -124.84                           | 5,291.92                        | 5,280.88                         | 11.04                     | 479.373            |           |
| 3,091.63                                                                       | 3,091.63              | 2,545.00              | 2,544.57              | 6.84             | 4.41          | -1.36                  |                       | 5,266.63                          | -124.84                           | 5,301.39                        | 5,290.14                         | 11.25                     | 471.435            |           |
| 3,100.00                                                                       | 3,100.00              | 2,545.00              | 2,544.57              | 6.86             | 4.41          | 23.60                  |                       | 5,266.63                          | -124.84                           | 5,302.27                        | 5,291.01                         | 11.26                     | 470.729            |           |
| 3,150.00                                                                       | 3,149.88              | 2,545.00              | 2,544.57              | 6.97             | 4.41          | 23.47                  |                       | 5,266.63                          | -124.84                           | 5,305.25                        | 5,293.87                         | 11.38                     | 466.306            |           |
| 3,200.00                                                                       | 3,199.22              | 2,576.00              | 2,575.30              | 7.09             | 4.41          | 23.53                  |                       | 5,270.46                          | -126.23                           | 5,304.16                        | 5,292.66                         | 11.50                     | 461.129            |           |
| 3,250.00                                                                       | 3,247.57              | 2,576.00              | 2,575.30              | 7.21             | 4.41          | 23.76                  |                       | 5,270.46                          | -126.23                           | 5,299.00                        | 5,287.37                         | 11.63                     | 455.797            |           |
| 3,300.00                                                                       | 3,294.49              | 2,576.00              | 2,575.30              | 7.34             | 4.41          | 24.17                  |                       | 5,270.46                          | -126.23                           | 5,289.95                        | 5,278.20                         | 11.75                     | 450.149            |           |
| 3,350.00                                                                       | 3,339.53              | 2,576.00              | 2,575.30              | 7.47             | 4.41          | 24.77                  |                       | 5,270.46                          | -126.23                           | 5,277.09                        | 5,265.20                         | 11.89                     | 443.991            |           |
| 3,400.00                                                                       | 3,382.30              | 2,576.00              | 2,575.30              | 7.64             | 4.41          | 25.60                  |                       | 5,270.46                          | -126.23                           | 5,260.50                        | 5,248.44                         | 12.06                     | 436.333            |           |
| 3,450.00                                                                       | 3,422.39              | 2,576.00              | 2,575.30              | 7.86             | 4.41          | 26.67                  |                       | 5,270.46                          | -126.23                           | 5,240.29                        | 5,228.02                         | 12.28                     | 426.859            |           |
| 3,500.00                                                                       | 3,459.43              | 2,576.00              | 2,575.30              | 8.14             | 4.41          | 28.03                  |                       | 5,270.46                          | -126.23                           | 5,216.62                        | 5,204.07                         | 12.55                     | 415.515            |           |
| 3,550.00                                                                       | 3,493.09              | 2,576.00              | 2,575.30              | 8.49             | 4.41          | 29.73                  |                       | 5,270.46                          | -126.23                           | 5,189.66                        | 5,176.76                         | 12.90                     | 402.270            |           |
| 3,600.00                                                                       | 3,523.05              | 2,576.00              | 2,575.30              | 8.91             | 4.41          | 31.85                  |                       | 5,270.46                          | -126.23                           | 5,159.60                        | 5,146.28                         | 13.32                     | 387.261            |           |
| 3,650.00                                                                       | 3,549.04              | 2,591.89              | 2,590.90              | 9.41             | 4.42          | 34.60                  |                       | 5,273.27                          | -127.32                           | 5,126.35                        | 5,112.52                         | 13.83                     | 370.652            |           |
| 3,700.00                                                                       | 3,570.81              | 2,607.00              | 2,605.61              | 9.99             | 4.42          | 38.03                  |                       | 5,276.48                          | -128.52                           | 5,090.90                        | 5,076.49                         | 14.42                     | 353.111            |           |
| 3,750.00                                                                       | 3,588.18              | 2,607.00              | 2,605.61              | 10.65            | 4.42          | 42.19                  |                       | 5,276.48                          | -128.52                           | 5,052.85                        | 5,037.77                         | 15.07                     | 335.202            |           |
| 3,800.00                                                                       | 3,600.97              | 2,607.00              | 2,605.61              | 11.37            | 4.42          | 47.39                  |                       | 5,276.48                          | -128.52                           | 5,012.77                        | 4,996.97                         | 15.80                     | 317.323            |           |
| 3,850.00                                                                       | 3,609.07              | 2,607.00              | 2,605.61              | 12.15            | 4.42          | 53.85                  |                       | 5,276.48                          | -128.52                           | 4,971.00                        | 4,954.42                         | 16.57                     | 299.910            |           |
| 3,900.00                                                                       | 3,612.41              | 2,607.00              | 2,605.61              | 12.97            | 4.42          | 61.78                  |                       | 5,276.48                          | -128.52                           | 4,927.87                        | 4,910.48                         | 17.39                     | 283.301            |           |
| 3,912.54                                                                       | 3,612.49              | 2,607.00              | 2,605.61              | 13.18            | 4.42          | 64.01                  |                       | 5,276.48                          | -128.52                           | 4,916.89                        | 4,899.28                         | 17.61                     | 279.287            |           |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Phoenix Technology Services  
Anticollision Report



|                    |                              |                              |                   |
|--------------------|------------------------------|------------------------------|-------------------|
| Company:           | COG Operating LLC            | Local Co-ordinate Reference: | Well #5H          |
| Project:           | Eddy County, NM (NAD:27 NME) | TVD Reference:               | GL @ 3350.00usft  |
| Reference Site:    | Sherman 4 Fee                | MD Reference:                | GL @ 3350.00usft  |
| Site Error:        | 0.00 usft                    | North Reference:             | Grid              |
| Reference Well:    | #5H                          | Survey Calculation Method:   | Minimum Curvature |
| Well Error:        | 0.00 usft                    | Output errors are at         | 2.00 sigma        |
| Reference Wellbore | WB1                          | Database:                    | GCR DB            |
| Reference Design:  | Plan #1 03-17-14             | Offset TVD Reference:        | Offset Datum      |

| Offset Design: Tarpan 33 Fee - #2H - WB1/Job #1410167 - Surveys (Silver Oak 3) |                             |                             |                             |                     |                  |                              |                        |                |                              |                               |                                 | Offset Site Error:   | 0.00 usft |
|--------------------------------------------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|------------------------------|------------------------|----------------|------------------------------|-------------------------------|---------------------------------|----------------------|-----------|
| Survey Program: 100-VES/SCWSA-GYRO-3 2451-MWD                                  |                             |                             |                             |                     |                  |                              |                        |                |                              |                               |                                 | Offset Well Error:   | 0.00 usft |
| Reference                                                                      |                             | Offset                      |                             | Semi Major Axis     |                  | Highside<br>Toothface<br>(°) | Offset Wellbore Centre |                | Distance                     |                               | Minimum<br>Separation<br>(usft) | Separation<br>Factor | Warning   |
| Measured<br>Depth<br>(usft)                                                    | Vertical<br>Depth<br>(usft) | Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Reference<br>(usft) | Offset<br>(usft) |                              | +N/S<br>(usft)         | +E/W<br>(usft) | Between<br>Centres<br>(usft) | Between<br>Ellipses<br>(usft) |                                 |                      |           |
| 4,000.00                                                                       | 3,612.03                    | 2,607.00                    | 2,605.61                    | 14.63               | 4.42             | 61.75                        | 5,276.48               | -128.52        | 4,839.41                     | 4,820.35                      | 19.06                           | 253.943              |           |
| 4,100.00                                                                       | 3,611.50                    | 2,607.00                    | 2,605.61                    | 16.30               | 4.42             | 58.66                        | 5,276.48               | -128.52        | 4,749.27                     | 4,728.55                      | 20.72                           | 229.210              |           |
| 4,200.00                                                                       | 3,610.97                    | 2,607.00                    | 2,605.61                    | 17.99               | 4.42             | 54.92                        | 5,276.48               | -128.52        | 4,657.64                     | 4,635.22                      | 22.42                           | 207.754              |           |
| 4,300.00                                                                       | 3,610.43                    | 2,607.00                    | 2,605.61                    | 19.70               | 4.42             | 50.35                        | 5,276.48               | -128.52        | 4,564.68                     | 4,540.56                      | 24.12                           | 189.218              |           |
| 4,400.00                                                                       | 3,609.90                    | 2,607.00                    | 2,605.61                    | 21.39               | 4.42             | 44.73                        | 5,276.48               | -128.52        | 4,470.57                     | 4,444.76                      | 25.82                           | 173.166              |           |
| 4,500.00                                                                       | 3,609.36                    | 2,607.00                    | 2,605.61                    | 23.06               | 4.42             | 37.84                        | 5,276.48               | -128.52        | 4,375.51                     | 4,348.02                      | 27.49                           | 159.186              |           |
| 4,600.00                                                                       | 3,608.83                    | 2,607.00                    | 2,605.61                    | 24.70               | 4.42             | 29.50                        | 5,276.48               | -128.52        | 4,279.69                     | 4,250.56                      | 29.13                           | 146.930              |           |
| 4,700.00                                                                       | 3,608.30                    | 2,607.00                    | 2,605.61                    | 26.31               | 4.42             | 19.71                        | 5,276.48               | -128.52        | 4,183.34                     | 4,152.61                      | 30.73                           | 136.118              |           |
| 4,800.00                                                                       | 3,607.78                    | 2,607.00                    | 2,605.61                    | 27.88               | 4.42             | 8.80                         | 5,276.48               | -128.52        | 4,086.70                     | 4,054.39                      | 32.30                           | 126.516              |           |
| 4,852.29                                                                       | 3,607.51                    | 2,607.00                    | 2,605.61                    | 28.68               | 4.42             | 2.88                         | 5,276.48               | -128.52        | 4,036.13                     | 4,003.02                      | 33.11                           | 121.910              |           |
| 4,900.00                                                                       | 3,607.26                    | 2,621.63                    | 2,619.72                    | 29.41               | 4.43             | 2.84                         | 5,280.10               | -129.86        | 3,989.73                     | 3,955.89                      | 33.84                           | 117.903              |           |
| 5,000.00                                                                       | 3,606.75                    | 2,638.00                    | 2,635.33                    | 30.93               | 4.44             | 2.77                         | 5,284.74               | -131.55        | 3,893.35                     | 3,857.98                      | 35.37                           | 110.083              |           |
| 5,100.00                                                                       | 3,606.23                    | 2,638.00                    | 2,635.33                    | 32.48               | 4.44             | 2.77                         | 5,284.74               | -131.55        | 3,796.79                     | 3,759.87                      | 36.92                           | 102.849              |           |
| 5,200.00                                                                       | 3,605.72                    | 2,638.00                    | 2,635.33                    | 34.05               | 4.44             | 2.77                         | 5,284.74               | -131.55        | 3,700.41                     | 3,661.92                      | 38.49                           | 96.138               |           |
| 5,300.00                                                                       | 3,605.20                    | 2,638.00                    | 2,635.33                    | 35.65               | 4.44             | 2.77                         | 5,284.74               | -131.55        | 3,604.22                     | 3,564.13                      | 40.09                           | 89.909               |           |
| 5,400.00                                                                       | 3,604.68                    | 2,638.00                    | 2,635.33                    | 37.26               | 4.44             | 2.77                         | 5,284.74               | -131.55        | 3,508.25                     | 3,466.55                      | 41.70                           | 84.122               |           |
| 5,500.00                                                                       | 3,604.17                    | 2,638.00                    | 2,635.33                    | 38.90               | 4.44             | 2.77                         | 5,284.74               | -131.55        | 3,412.51                     | 3,369.17                      | 43.34                           | 78.741               |           |
| 5,600.00                                                                       | 3,603.65                    | 2,638.00                    | 2,635.33                    | 40.55               | 4.44             | 2.77                         | 5,284.74               | -131.55        | 3,317.02                     | 3,272.04                      | 44.99                           | 73.731               |           |
| 5,700.00                                                                       | 3,603.14                    | 2,638.00                    | 2,635.33                    | 42.21               | 4.44             | 2.77                         | 5,284.74               | -131.55        | 3,221.81                     | 3,175.16                      | 46.65                           | 69.061               |           |
| 5,800.00                                                                       | 3,602.62                    | 2,638.00                    | 2,635.33                    | 43.89               | 4.44             | 2.77                         | 5,284.74               | -131.55        | 3,126.89                     | 3,078.57                      | 48.33                           | 64.703               |           |
| 5,900.00                                                                       | 3,602.10                    | 2,652.73                    | 2,649.18                    | 45.57               | 4.45             | 2.69                         | 5,289.45               | -133.27        | 3,032.02                     | 2,981.99                      | 50.03                           | 60.607               |           |
| 6,000.00                                                                       | 3,601.59                    | 2,669.00                    | 2,664.25                    | 47.27               | 4.47             | 2.59                         | 5,295.20               | -135.38        | 2,937.80                     | 2,886.06                      | 51.74                           | 56.781               |           |
| 6,100.00                                                                       | 3,601.07                    | 2,669.00                    | 2,664.25                    | 48.97               | 4.47             | 2.59                         | 5,295.20               | -135.38        | 2,843.60                     | 2,790.15                      | 53.44                           | 53.207               |           |
| 6,200.00                                                                       | 3,600.56                    | 2,669.00                    | 2,664.25                    | 50.69               | 4.47             | 2.59                         | 5,295.20               | -135.38        | 2,749.81                     | 2,694.65                      | 55.16                           | 49.854               |           |
| 6,300.00                                                                       | 3,600.04                    | 2,669.00                    | 2,664.25                    | 52.41               | 4.47             | 2.59                         | 5,295.20               | -135.38        | 2,656.47                     | 2,599.59                      | 56.88                           | 46.706               |           |
| 6,400.00                                                                       | 3,599.53                    | 2,669.00                    | 2,664.25                    | 54.13               | 4.47             | 2.59                         | 5,295.20               | -135.38        | 2,563.64                     | 2,505.03                      | 58.60                           | 43.745               |           |
| 6,500.00                                                                       | 3,599.01                    | 2,684.90                    | 2,678.76                    | 55.87               | 4.49             | 2.48                         | 5,301.30               | -137.60        | 2,471.09                     | 2,410.73                      | 60.36                           | 40.940               |           |
| 6,600.00                                                                       | 3,598.49                    | 2,700.00                    | 2,692.36                    | 57.60               | 4.51             | 2.36                         | 5,307.48               | -139.79        | 2,379.18                     | 2,317.06                      | 62.12                           | 38.301               |           |
| 6,700.00                                                                       | 3,597.98                    | 2,700.00                    | 2,692.36                    | 59.35               | 4.51             | 2.36                         | 5,307.48               | -139.79        | 2,287.69                     | 2,223.83                      | 63.86                           | 35.823               |           |
| 6,800.00                                                                       | 3,597.46                    | 2,700.00                    | 2,692.36                    | 61.09               | 4.51             | 2.36                         | 5,307.48               | -139.79        | 2,196.94                     | 2,131.33                      | 65.61                           | 33.486               |           |
| 6,900.00                                                                       | 3,596.95                    | 2,717.83                    | 2,708.18                    | 62.84               | 4.55             | 2.20                         | 5,315.23               | -142.57        | 2,106.68                     | 2,039.28                      | 67.40                           | 31.258               |           |
| 7,000.00                                                                       | 3,596.43                    | 2,732.00                    | 2,720.54                    | 64.60               | 4.58             | 2.06                         | 5,321.74               | -144.96        | 2,017.25                     | 1,948.07                      | 69.18                           | 29.158               |           |
| 7,100.00                                                                       | 3,595.91                    | 2,732.00                    | 2,720.54                    | 66.36               | 4.58             | 2.06                         | 5,321.74               | -144.96        | 1,928.61                     | 1,857.67                      | 70.94                           | 27.186               |           |
| 7,200.00                                                                       | 3,595.40                    | 2,744.78                    | 2,731.50                    | 68.12               | 4.62             | 1.92                         | 5,327.92               | -147.17        | 1,840.90                     | 1,768.16                      | 72.74                           | 25.308               |           |
| 7,300.00                                                                       | 3,594.88                    | 2,763.00                    | 2,746.79                    | 69.88               | 4.67             | 1.72                         | 5,337.34               | -150.22        | 1,754.42                     | 1,679.86                      | 74.56                           | 23.531               |           |
| 7,400.00                                                                       | 3,594.37                    | 2,763.00                    | 2,746.79                    | 71.65               | 4.67             | 1.72                         | 5,337.34               | -150.22        | 1,668.89                     | 1,592.57                      | 76.32                           | 21.866               |           |
| 7,500.00                                                                       | 3,593.85                    | 2,775.91                    | 2,757.40                    | 73.42               | 4.72             | 1.59                         | 5,344.41               | -152.22        | 1,584.84                     | 1,506.69                      | 78.14                           | 20.281               |           |
| 7,600.00                                                                       | 3,593.34                    | 2,794.00                    | 2,772.00                    | 75.19               | 4.79             | 1.42                         | 5,354.82               | -154.64        | 1,502.31                     | 1,422.33                      | 79.99                           | 18.782               |           |
| 7,700.00                                                                       | 3,592.82                    | 2,815.19                    | 2,788.84                    | 76.97               | 4.89             | 1.23                         | 5,367.44               | -157.11        | 1,421.25                     | 1,339.39                      | 81.86                           | 17.362               |           |
| 7,800.00                                                                       | 3,592.30                    | 2,825.00                    | 2,796.60                    | 78.74               | 4.94             | 1.15                         | 5,373.35               | -158.19        | 1,341.76                     | 1,258.07                      | 83.68                           | 16.034               |           |
| 7,900.00                                                                       | 3,591.79                    | 2,856.00                    | 2,820.37                    | 80.52               | 5.11             | 0.85                         | 5,392.89               | -161.84        | 1,264.03                     | 1,178.40                      | 85.63                           | 14.761               |           |
| 8,000.00                                                                       | 3,591.27                    | 2,871.77                    | 2,831.94                    | 82.30               | 5.22             | 0.66                         | 5,403.40               | -163.96        | 1,188.83                     | 1,101.31                      | 87.52                           | 13.584               |           |
| 8,100.00                                                                       | 3,590.76                    | 2,887.00                    | 2,842.78                    | 84.08               | 5.32             | 0.47                         | 5,413.85               | -166.24        | 1,116.37                     | 1,026.97                      | 89.40                           | 12.487               |           |
| 8,200.00                                                                       | 3,590.24                    | 2,919.00                    | 2,864.46                    | 85.87               | 5.58             | -0.03                        | 5,436.73               | -171.75        | 1,046.86                     | 955.42                        | 91.44                           | 11.449               |           |
| 8,246.57                                                                       | 3,590.00                    | 2,919.00                    | 2,864.46                    | 86.70               | 5.58             | -0.03                        | 5,436.73               | -171.75        | 1,015.80                     | 923.52                        | 92.27                           | 11.009 CC, ES, SF    |           |

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



Phoenix Technology Services  
Anticollision Report

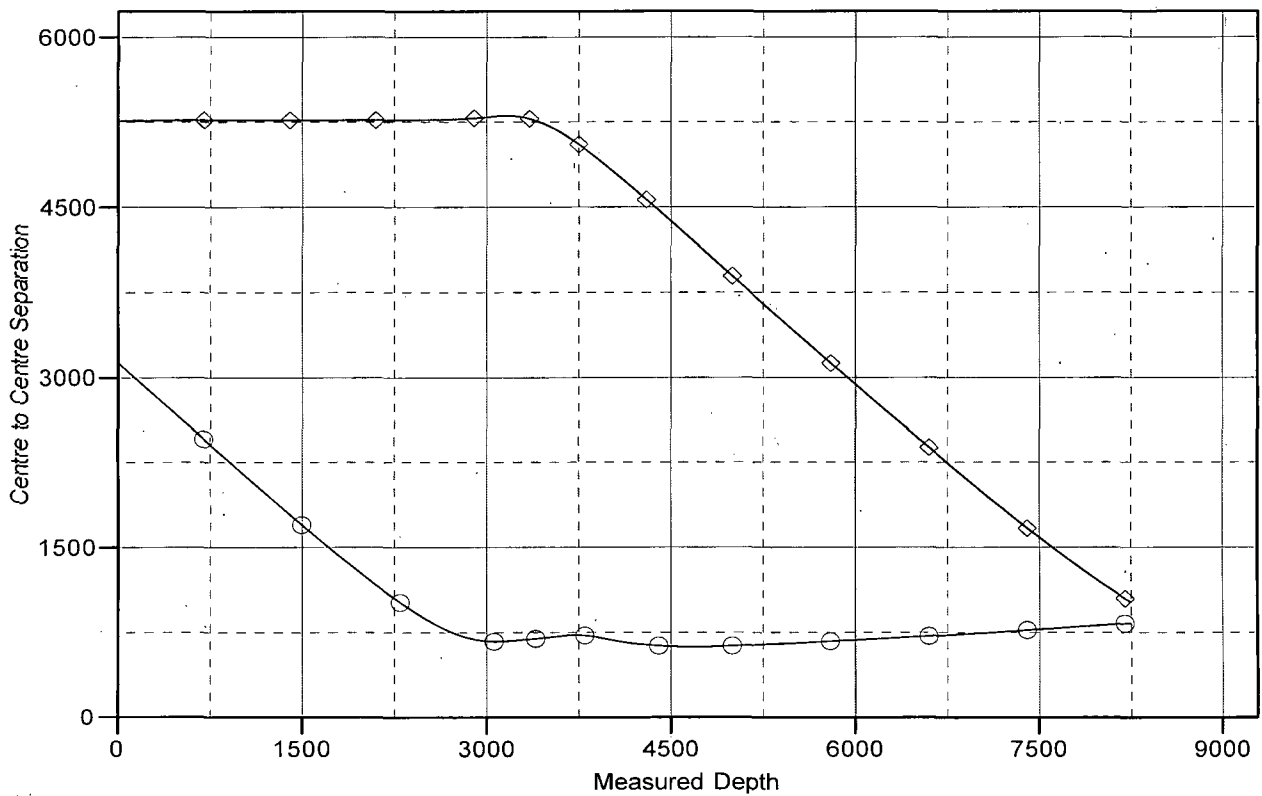


|                     |                              |                              |                   |
|---------------------|------------------------------|------------------------------|-------------------|
| Company:            | COG Operating, LLC           | Local Co-ordinate Reference: | Well #5H          |
| Project:            | Eddy County, NM (NAD:27,NME) | TVD Reference:               | GL @ 3350.00usft  |
| Reference Site:     | Sherman 4 Fee                | MD Reference:                | GL @ 3350.00usft  |
| Site Error:         | 0:00:usft                    | North Reference:             | Grid              |
| Reference Well:     | #5H                          | Survey Calculation Method:   | Minimum Curvature |
| Well Error:         | 0:00:usft                    | Output errors are at         | 2:00:sigma        |
| Reference Wellbore: | WB1                          | Database:                    | GCR:DB            |
| Reference Design:   | Plan #1 03-17-14             | Offset TVD Reference:        | Offset Datum      |

Reference Depths are relative to GL @ 3350.00usft  
Offset Depths are relative to Offset Datum  
Central Meridian is 104° 19' 60.00000 W

Coordinates are relative to: #5H  
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30  
Grid Convergence at Surface is: -0.03°

### Ladder Plot



### LEGEND

#10H, WB1, Plan #1 02-26-14 V0

◆ #2H, WB1/Job #1410167, Surveys (Silver Oak 3) V0



Phoenix Technology Services  
Anticollision Report

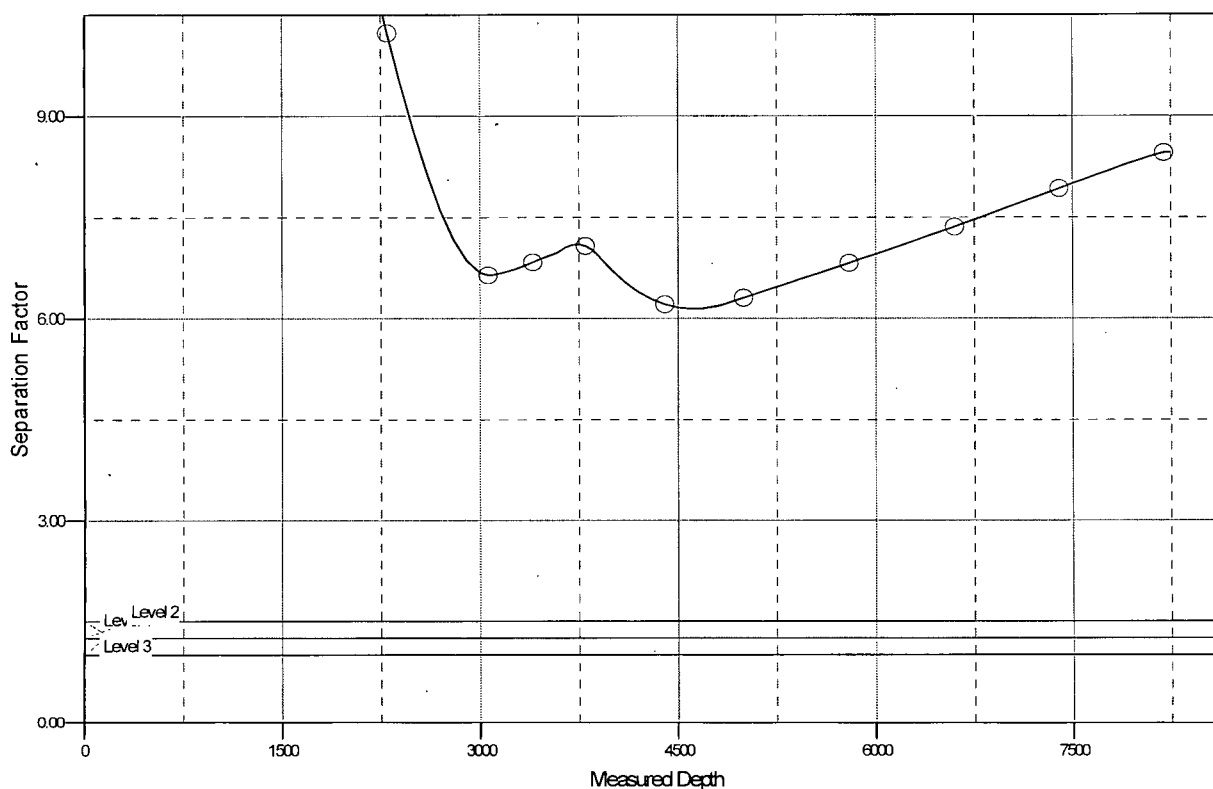


|                    |                              |                              |                   |
|--------------------|------------------------------|------------------------------|-------------------|
| Company:           | COG Operating LLC            | Local Co-ordinate Reference: | Well #5H          |
| Project:           | Eddy County, NM (NAD:27,NME) | TVD Reference:               | GL @ 3350.00usft  |
| Reference Site:    | Sherman 4 Fee                | MD Reference:                | GL @ 3350.00usft  |
| Site Error:        | 0.00 usft                    | North Reference:             | Grid              |
| Reference Well:    | #5H                          | Survey Calculation Method:   | Minimum Curvature |
| Well Error:        | 0.00 usft                    | Output errors are at         | 2.00 sigma        |
| Reference Wellbore | WB1                          | Database:                    | GCR DB            |
| Reference Design:  | Plan #1, 03-17-14            | Offset TVD Reference:        | Offset Datum      |

Reference Depths are relative to GL @ 3350.00usft  
Offset Depths are relative to Offset Datum  
Central Meridian is 104° 19' 60.00000 W

Coordinates are relative to: #5H  
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30  
Grid Convergence at Surface is: -0.03°

## Separation Factor Plot



### LEGEND

#10H, WB1, Plan #1, 02-26-14 V0

◆ #2H, WB1/Job #1410167, Surveys (Silver Oak 3) V0