

Submit 1 Copy To Appropriate District  
Office  
District I - (575) 393-6161  
1625 N. French Dr., Hobbs, NM 88240  
District II - (575) 748-1283  
811 S. First St., Artesia, NM 88210  
District III - (505) 334-6178  
1000 Rio Brazos Rd., Aztec, NM 87410  
District IV - (505) 476-3460  
1220 S. St. Francis Dr., Santa Fe, NM  
87505

State of New Mexico  
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Form C-103  
Revised August 1, 2011

|                                                                                                     |
|-----------------------------------------------------------------------------------------------------|
| WELL API NO.<br><b>30-015-40410</b>                                                                 |
| 5. Indicate Type of Lease<br>STATE <input checked="" type="checkbox"/> FEE <input type="checkbox"/> |
| 6. State Oil & Gas Lease No.                                                                        |
| 7. Lease Name or Unit Agreement Name<br><b>Big Girl 31 State</b>                                    |
| 8. Well Number <b>11H</b>                                                                           |
| 9. OGRID Number<br><b>229137</b>                                                                    |
| 10. Pool name or Wildcat<br><b>Red Lake; Glorieta Yeso, Northeast 96836</b>                         |
| 11. Elevation (Show whether DR, RKB, RT, GR, etc.)<br><b>3668</b>                                   |

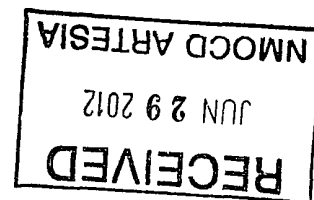
|                                                                                                                                                                                                                      |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| SUNDRY NOTICES AND REPORTS ON WELLS<br>(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)                |  |
| 1. Type of Well: Oil Well <input checked="" type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/>                                                                                       |  |
| 2. Name of Operator<br><b>COG Operating LLC</b>                                                                                                                                                                      |  |
| 3. Address of Operator<br><b>550 W Texas Suite 100 Midland, TX 79701</b>                                                                                                                                             |  |
| 4. Well Location<br>Unit Letter <b>M</b> : <b>615</b> feet from the <b>SOUTH</b> line and <b>10</b> feet from the <b>WEST</b> line<br>Section <b>31</b> Township <b>17S</b> Range <b>28E</b> NMPM County <b>EDDY</b> |  |
| 11. Elevation (Show whether DR, RKB, RT, GR, etc.)<br><b>3668</b>                                                                                                                                                    |  |

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

| NOTICE OF INTENTION TO:                                                                                                                                                                                                                                                                     |                                           | SUBSEQUENT REPORT OF:                            |                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|--------------------------------------------------|------------------------------------------|
| PERFORM REMEDIAL WORK <input type="checkbox"/>                                                                                                                                                                                                                                              | PLUG AND ABANDON <input type="checkbox"/> | REMEDIAL WORK <input type="checkbox"/>           | ALTERING CASING <input type="checkbox"/> |
| TEMPORARILY ABANDON <input type="checkbox"/>                                                                                                                                                                                                                                                | CHANGE PLANS <input type="checkbox"/>     | COMMENCE DRILLING OPNS. <input type="checkbox"/> | P AND A <input type="checkbox"/>         |
| PULL OR ALTER CASING <input type="checkbox"/>                                                                                                                                                                                                                                               | MULTIPLE COMPL <input type="checkbox"/>   | CASING/CEMENT JOB <input type="checkbox"/>       |                                          |
| DOWNHOLE COMMINGLE <input type="checkbox"/>                                                                                                                                                                                                                                                 |                                           |                                                  |                                          |
| OTHER. <b>Change Cement</b> <input checked="" type="checkbox"/>                                                                                                                                                                                                                             |                                           | OTHER: <input type="checkbox"/>                  |                                          |
| 13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion. |                                           |                                                  |                                          |

**COG respectfully requests to change the TVD to 5000' and MD to 9781'.**

**Attached is a revised Directional Plan for your review.**



Spud Date:

Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE  TITLE Permitting Tech DATE 6/26/2012  
Type or print name Kelly J. Holly E-mail address: kholly@concho.com PHONE: 432-685-4384  
**For State Use Only**  
APPROVED BY: T.C. Shepard TITLE: Geologist DATE: 6/29/2012

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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>30-015-40410 | Pool Code<br>96836                  | Pool Name<br>Red Lake; Glorieta Yeso, Northeast |
| Property Code<br>39213     | Property Name<br>BIG GIRL 31 STATE  | Well Number<br>11H                              |
| OGRID No.<br>229137        | Operator Name<br>COG OPERATING, LLC | Elevation<br>3668'                              |

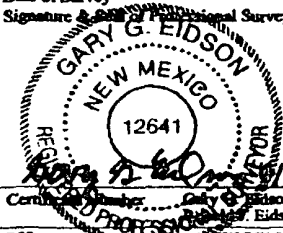
Surface Location

| UL or lot No. | Section | Township | Range | Lot Ida | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| 4             | 31      | 17-S     | 28-E  |         | 615           | SOUTH            | 10            | WEST           | EDDY   |

Bottom Hole Location If Different From Surface

| UL or lot No.          | Section         | Township           | Range     | Lot Ida | Feet from the | North/South line | Feet from the | East/West line | County |
|------------------------|-----------------|--------------------|-----------|---------|---------------|------------------|---------------|----------------|--------|
| P                      | 31              | 17-S               | 28-E      |         | 330           | SOUTH            | 330           | EAST           | EDDY   |
| Dedicated Acres<br>160 | 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

|                                               |                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LOT 1                                         | <p>CORNER COORDINATES TABLE</p> <p>A) Y=649958.1 N, X=533903.0 E</p> <p>B) Y=650045.8 N, X=539213.6 E</p> <p>C) Y=648637.2 N, X=533910.6 E</p> <p>D) Y=648742.8 N, X=539234.0 E</p> | <p><b>OPERATOR CERTIFICATION</b></p> <p>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 unknown 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.</p> <p> 6-29-12<br/>Date</p> <p>Kelly J. Holly<br/>Printed Name</p> <p>kholly@concho.com<br/>E-mail Address</p> |
| LOT 2                                         | <p>GEODETIC COORDINATES<br/>NAD 27 NME</p> <p>SURFACE LOCATION<br/>Y=649252.3 N<br/>X=533917.0 E</p>                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| LOT 3                                         | <p>LAT.=32.784837° N<br/>LONG.=104.222971° W</p> <p>BOTTOM HOLE LOCATION<br/>Y=649066.0 N<br/>X=538899.0 E</p>                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| LOT 4                                         | <p>GRID. AZ.=92°08'27"</p> <p>HORIZ. DIST.=4986.7'</p>                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <p>A 10' S.L. 615</p> <p>B.H. 330' 330' D</p> |                                                                                                                                                                                     | <p><b>SURVEYOR CERTIFICATION</b></p> <p>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.</p> <p>MAY 19, 2012</p> <p>Date of Survey</p> <p>Signature &amp; Seal of Professional Surveyor:</p> <p> 12641</p> <p>Certified by: Gary G. Eidson 12641<br/>Professional Surveyor: Gary G. Eidson 3239</p> <p>DSS JW3C W.O.: 12.11.0981</p>                                                                                                                                                  |

# **COG Operating LLC**

**Eddy County, NM**

**Big Girl 31 State 11H**

**Big Girl 31 State 11H**

**Wellbore #1**

**Plan: Plan #2**

**Surface: 615' FSL, 10' FWL, Sec 31, T17S, R28E, Lot #4**

**BHL: 330' FSL, 330' FEL, Sec 31, T17S, R28E, Unit P**

**PP: 603' FSL, 330' FWL, Sec 31, T17S, R28E, Lot #4**

**RECEIVED**

**JUN 29 2012**

**NMOCD ARTESIA**

## **Standard Planning Report**

**25 June, 2012**

# Planning Report

**Database:** Houston R5000 Database  
**Company:** COG Operating LLC  
**Project:** Eddy County, NM  
**Site:** Big Girl 31 State 11H  
**Well:** Big Girl 31 State 11H  
**Wellbore:** Wellbore #1  
**Design:** Plan #2

**Local Co-ordinate Reference:** Site Big Girl 31 State 11H  
**TVD Reference:** WELL @ 3685 00ft (Original Well Elev)  
**MD Reference:** WELL @ 3685 00ft (Original Well Elev)  
**North Reference:** Grd  
**Survey Calculation Method:** Minimum Curvature

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

|                              |                       |                     |               |                          |               |
|------------------------------|-----------------------|---------------------|---------------|--------------------------|---------------|
| <b>Site</b>                  | Big Girl 31 State 11H |                     |               |                          |               |
| <b>Site Position:</b>        |                       | <b>Northing:</b>    | 649,252 30 ft | <b>Latitude:</b>         | 32 78483326   |
| <b>From:</b>                 | Map                   | <b>Easting:</b>     | 533,917 00 ft | <b>Longitude:</b>        | -104 22297492 |
| <b>Position Uncertainty:</b> | 0.00 ft               | <b>Slot Radius:</b> | 13 200 in     | <b>Grid Convergence:</b> | 0 06 °        |

|                      |                       |         |                     |               |               |               |
|----------------------|-----------------------|---------|---------------------|---------------|---------------|---------------|
| Well                 | Big Girl 31 State 11H |         |                     |               |               |               |
| Well Position        | +N/-S                 | 0 00 ft | Northing:           | 649,252 30 ft | Latitude:     | 32 78483326   |
|                      | +E/-W                 | 0 00 ft | Easting:            | 533,917 00 ft | Longitude:    | -104 22297492 |
| Position Uncertainty |                       | 0 00 ft | Wellhead Elevation: |               | Ground Level: | 3,667.00 ft   |

|                  |                   |                    |                        |                      |                            |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| <b>Wellbore</b>  | Wellbore #1       |                    |                        |                      |                            |
| <b>Magnetics</b> | <b>Model Name</b> | <b>Sample Date</b> | <b>Declination (°)</b> | <b>Dip Angle (°)</b> | <b>Field Strength (nT)</b> |
|                  | IGRF2010          | 5/14/2012          | 7 82                   | 60 57                | 48,788                     |

|                          |                         |                   |                      |                      |  |
|--------------------------|-------------------------|-------------------|----------------------|----------------------|--|
| <b>Design</b>            | Plan #2                 |                   |                      |                      |  |
| <b>Audit Notes:</b>      |                         |                   |                      |                      |  |
| <b>Version:</b>          | <b>Phase:</b>           | PROTOTYPE         | <b>Tie On Depth:</b> | 0 00                 |  |
| <b>Vertical Section:</b> | <b>Depth From (TVD)</b> | <b>+N/-S (ft)</b> | <b>+E/-W (ft)</b>    | <b>Direction (°)</b> |  |
|                          | 0 00                    | 0 00              | 0 00                 | 92 14                |  |

| Plan Sections       |                 |             |                     |            |            |                       |                      |                     |         |                       |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|----------------------|---------------------|---------|-----------------------|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) | TFO (°) | Target                |
| 0 00                | 0 00            | 0 00        | 0 00                | 0 00       | 0 00       | 0 00                  | 0 00                 | 0 00                | 0 00    |                       |
| 4,522 54            | 0 00            | 0 00        | 4,522.54            | 0 00       | 0 00       | 0 00                  | 0 00                 | 0 00                | 0 00    |                       |
| 5,272 54            | 90 00           | 92 14       | 5,000 00            | -17 84     | 477 13     | 12 00                 | 12 00                | 0 00                | 92 14   |                       |
| 9,780 55            | 90 00           | 92 14       | 5,000 00            | -186 30    | 4,982 00   | 0 00                  | 0 00                 | 0 00                | 0 00    | PBHL (Big Girl 31 Sta |

# Planning Report

Database: Houston R5000 Database  
 Company: COG Operating LLC  
 Project: Eddy County, NM  
 Site: Big Girl 31 State 11H  
 Well: Big Girl 31 State 11H  
 Wellbore: Wellbore #1  
 Design: Plan #2

Local Co-ordinate Reference: Site Big Girl 31 State 11H  
 TVD Reference: WELL @ 3685 00ft (Original Well Elev)  
 MD Reference: WELL @ 3685 00ft (Original Well Elev)  
 North Reference: Grd  
 Survey Calculation Method: Minimum Curvature

## Planned Survey

| Measured Depth (ft)                                                 | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N-S (ft) | +E-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---------------------------------------------------------------------|-----------------|-------------|---------------------|-----------|-----------|-----------------------|-----------------------|----------------------|---------------------|
| 4,522.54                                                            | 0.00            | 0.00        | 4,522.54            | 0.00      | 0.00      | 0.00                  | 0.00                  | 0.00                 | 0.00                |
| <b>KOP - Start Build @ 0.00°/100'</b>                               |                 |             |                     |           |           |                       |                       |                      |                     |
| 4,600.00                                                            | 9.30            | 92.14       | 4,599.66            | -0.23     | 6.27      | 6.27                  | 12.00                 | 12.00                | 0.00                |
| 4,700.00                                                            | 21.30           | 92.14       | 4,695.94            | -1.22     | 32.58     | 32.60                 | 12.00                 | 12.00                | 0.00                |
| 4,800.00                                                            | 33.30           | 92.14       | 4,784.64            | -2.93     | 78.32     | 78.38                 | 12.00                 | 12.00                | 0.00                |
| 4,900.00                                                            | 45.30           | 92.14       | 4,861.89            | -5.29     | 141.49    | 141.59                | 12.00                 | 12.00                | 0.00                |
| 5,000.00                                                            | 57.30           | 92.14       | 4,924.31            | -8.20     | 219.34    | 219.49                | 12.00                 | 12.00                | 0.00                |
| 5,100.00                                                            | 69.30           | 92.14       | 4,969.16            | -11.53    | 308.44    | 308.66                | 12.00                 | 12.00                | 0.00                |
| 5,112.30                                                            | 70.77           | 92.14       | 4,973.36            | -11.97    | 320.00    | 320.22                | 12.00                 | 12.00                | 0.00                |
| <b>PP @ 5112.30 MD, 4973.36 TVD, 70.77 INC, 92.14 AZ, 320.22 VS</b> |                 |             |                     |           |           |                       |                       |                      |                     |
| 5,200.00                                                            | 81.30           | 92.14       | 4,994.50            | -15.14    | 404.93    | 405.21                | 12.00                 | 12.00                | 0.00                |
| 5,272.54                                                            | 90.00           | 92.14       | 5,000.00            | -17.84    | 477.13    | 477.46                | 12.00                 | 12.00                | 0.00                |
| <b>Landing Point - Hold @ 90.00° INC, 92.14° AZ</b>                 |                 |             |                     |           |           |                       |                       |                      |                     |
| 5,300.00                                                            | 90.00           | 92.14       | 5,000.00            | -18.87    | 504.58    | 504.93                | 0.00                  | 0.00                 | 0.00                |
| 5,400.00                                                            | 90.00           | 92.14       | 5,000.00            | -22.61    | 604.51    | 604.93                | 0.00                  | 0.00                 | 0.00                |
| 5,500.00                                                            | 90.00           | 92.14       | 5,000.00            | -26.34    | 704.44    | 704.93                | 0.00                  | 0.00                 | 0.00                |
| 5,600.00                                                            | 90.00           | 92.14       | 5,000.00            | -30.08    | 804.37    | 804.93                | 0.00                  | 0.00                 | 0.00                |
| 5,700.00                                                            | 90.00           | 92.14       | 5,000.00            | -33.82    | 904.30    | 904.93                | 0.00                  | 0.00                 | 0.00                |
| 5,800.00                                                            | 90.00           | 92.14       | 5,000.00            | -37.55    | 1,004.23  | 1,004.93              | 0.00                  | 0.00                 | 0.00                |
| 5,900.00                                                            | 90.00           | 92.14       | 5,000.00            | -41.29    | 1,104.16  | 1,104.93              | 0.00                  | 0.00                 | 0.00                |
| 6,000.00                                                            | 90.00           | 92.14       | 5,000.00            | -45.03    | 1,204.09  | 1,204.93              | 0.00                  | 0.00                 | 0.00                |
| 6,100.00                                                            | 90.00           | 92.14       | 5,000.00            | -48.76    | 1,304.02  | 1,304.93              | 0.00                  | 0.00                 | 0.00                |
| 6,200.00                                                            | 90.00           | 92.14       | 5,000.00            | -52.50    | 1,403.95  | 1,404.93              | 0.00                  | 0.00                 | 0.00                |
| 6,300.00                                                            | 90.00           | 92.14       | 5,000.00            | -56.24    | 1,503.88  | 1,504.93              | 0.00                  | 0.00                 | 0.00                |
| 6,400.00                                                            | 90.00           | 92.14       | 5,000.00            | -59.97    | 1,603.81  | 1,604.93              | 0.00                  | 0.00                 | 0.00                |
| 6,500.00                                                            | 90.00           | 92.14       | 5,000.00            | -63.71    | 1,703.74  | 1,704.93              | 0.00                  | 0.00                 | 0.00                |
| 6,600.00                                                            | 90.00           | 92.14       | 5,000.00            | -67.45    | 1,803.67  | 1,804.93              | 0.00                  | 0.00                 | 0.00                |
| 6,700.00                                                            | 90.00           | 92.14       | 5,000.00            | -71.18    | 1,903.60  | 1,904.93              | 0.00                  | 0.00                 | 0.00                |
| 6,800.00                                                            | 90.00           | 92.14       | 5,000.00            | -74.92    | 2,003.53  | 2,004.93              | 0.00                  | 0.00                 | 0.00                |
| 6,900.00                                                            | 90.00           | 92.14       | 5,000.00            | -78.66    | 2,103.46  | 2,104.93              | 0.00                  | 0.00                 | 0.00                |
| 7,000.00                                                            | 90.00           | 92.14       | 5,000.00            | -82.39    | 2,203.39  | 2,204.93              | 0.00                  | 0.00                 | 0.00                |
| 7,100.00                                                            | 90.00           | 92.14       | 5,000.00            | -86.13    | 2,303.32  | 2,304.93              | 0.00                  | 0.00                 | 0.00                |
| 7,200.00                                                            | 90.00           | 92.14       | 5,000.00            | -89.87    | 2,403.25  | 2,404.93              | 0.00                  | 0.00                 | 0.00                |
| 7,300.00                                                            | 90.00           | 92.14       | 5,000.00            | -93.61    | 2,503.18  | 2,504.93              | 0.00                  | 0.00                 | 0.00                |
| 7,400.00                                                            | 90.00           | 92.14       | 5,000.00            | -97.34    | 2,603.11  | 2,604.93              | 0.00                  | 0.00                 | 0.00                |
| 7,500.00                                                            | 90.00           | 92.14       | 5,000.00            | -101.08   | 2,703.04  | 2,704.93              | 0.00                  | 0.00                 | 0.00                |
| 7,600.00                                                            | 90.00           | 92.14       | 5,000.00            | -104.82   | 2,802.97  | 2,804.93              | 0.00                  | 0.00                 | 0.00                |
| 7,700.00                                                            | 90.00           | 92.14       | 5,000.00            | -108.55   | 2,902.90  | 2,904.93              | 0.00                  | 0.00                 | 0.00                |
| 7,800.00                                                            | 90.00           | 92.14       | 5,000.00            | -112.29   | 3,002.83  | 3,004.93              | 0.00                  | 0.00                 | 0.00                |
| 7,900.00                                                            | 90.00           | 92.14       | 5,000.00            | -116.03   | 3,102.76  | 3,104.93              | 0.00                  | 0.00                 | 0.00                |
| 8,000.00                                                            | 90.00           | 92.14       | 5,000.00            | -119.76   | 3,202.69  | 3,204.93              | 0.00                  | 0.00                 | 0.00                |
| 8,100.00                                                            | 90.00           | 92.14       | 5,000.00            | -123.50   | 3,302.62  | 3,304.93              | 0.00                  | 0.00                 | 0.00                |
| 8,200.00                                                            | 90.00           | 92.14       | 5,000.00            | -127.24   | 3,402.55  | 3,404.93              | 0.00                  | 0.00                 | 0.00                |
| 8,300.00                                                            | 90.00           | 92.14       | 5,000.00            | -130.97   | 3,502.48  | 3,504.93              | 0.00                  | 0.00                 | 0.00                |
| 8,400.00                                                            | 90.00           | 92.14       | 5,000.00            | -134.71   | 3,602.41  | 3,604.93              | 0.00                  | 0.00                 | 0.00                |
| 8,500.00                                                            | 90.00           | 92.14       | 5,000.00            | -138.45   | 3,702.34  | 3,704.93              | 0.00                  | 0.00                 | 0.00                |
| 8,600.00                                                            | 90.00           | 92.14       | 5,000.00            | -142.18   | 3,802.27  | 3,804.93              | 0.00                  | 0.00                 | 0.00                |
| 8,700.00                                                            | 90.00           | 92.14       | 5,000.00            | -145.92   | 3,902.20  | 3,904.93              | 0.00                  | 0.00                 | 0.00                |
| 8,800.00                                                            | 90.00           | 92.14       | 5,000.00            | -149.66   | 4,002.13  | 4,004.93              | 0.00                  | 0.00                 | 0.00                |
| 8,900.00                                                            | 90.00           | 92.14       | 5,000.00            | -153.40   | 4,102.06  | 4,104.93              | 0.00                  | 0.00                 | 0.00                |
| 9,000.00                                                            | 90.00           | 92.14       | 5,000.00            | -157.13   | 4,201.99  | 4,204.93              | 0.00                  | 0.00                 | 0.00                |
| 9,100.00                                                            | 90.00           | 92.14       | 5,000.00            | -160.87   | 4,301.92  | 4,304.93              | 0.00                  | 0.00                 | 0.00                |
| 9,200.00                                                            | 90.00           | 92.14       | 5,000.00            | -164.61   | 4,401.85  | 4,404.93              | 0.00                  | 0.00                 | 0.00                |

# Planning Report

**Database:** Houston R5000 Database  
**Company:** COG Operating LLC  
**Project:** Eddy County, NM  
**Site:** Big Girl 31 State 11H  
**Well:** Big Girl 31 State 11H  
**Wellbore:** Wellbore #1  
**Design:** Plan #2

**Local Co-ordinate Reference:** Site Big Girl 31 State 11H  
**TVD Reference:** WELL @ 3685 00ft (Original Well Elev)  
**MD Reference:** WELL @ 3685 00ft (Original Well Elev)  
**North Reference:** Gnd  
**Survey Calculation Method:** Minimum Curvature

## Planned Survey

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N-S (ft) | +E-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---------------------|-----------------|-------------|---------------------|-----------|-----------|-----------------------|-----------------------|----------------------|---------------------|
| 9,300 00            | 90 00           | 92 14       | 5,000 00            | -168 34   | 4,501 78  | 4,504 93              | 0 00                  | 0 00                 | 0 00                |
| 9,400 00            | 90 00           | 92 14       | 5,000 00            | -172 08   | 4,601 71  | 4,604 93              | 0 00                  | 0 00                 | 0 00                |
| 9,500 00            | 90 00           | 92 14       | 5,000 00            | -175 82   | 4,701 64  | 4,704 93              | 0 00                  | 0 00                 | 0 00                |
| 9,600 00            | 90 00           | 92 14       | 5,000 00            | -179 55   | 4,801 57  | 4,804 93              | 0 00                  | 0 00                 | 0 00                |
| 9,700 00            | 90 00           | 92 14       | 5,000 00            | -183 29   | 4,901 50  | 4,904 93              | 0 00                  | 0 00                 | 0 00                |
| 9,780 55            | 90 00           | 92 14       | 5,000 00            | -186 30   | 4,982 00  | 4,985 48              | 0 00                  | 0 00                 | 0 00                |

TD @ 9780.55' MD, 5000.00' TVD - PBHL (Big Girl 31 State 11H Plan 2)

## Design Targets

| Target Name                  | Dip Angle (°) | Dip Dir. (°) | TVD (ft) | +N-S (ft) | +E-W (ft) | Northing (ft) | Easting (ft) | Latitude    | Longitude     |
|------------------------------|---------------|--------------|----------|-----------|-----------|---------------|--------------|-------------|---------------|
| - hit/miss target            |               |              |          |           |           |               |              |             |               |
| - Shape                      |               |              |          |           |           |               |              |             |               |
| PBHL (Big Girl 31 State 11H) | 0 00          | 0 00         | 5,000 00 | -186 30   | 4,982 00  | 649,066 00    | 538,899 00   | 32 78430584 | -104 20676488 |
| - plan hits target center    |               |              |          |           |           |               |              |             |               |
| - Point                      |               |              |          |           |           |               |              |             |               |

## Plan Annotations

| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates |           | Comment                                                      |
|---------------------|---------------------|-------------------|-----------|--------------------------------------------------------------|
|                     |                     | +N-S (ft)         | +E-W (ft) |                                                              |
| 4,522 54            | 4,522 54            | 0 00              | 0 00      | KOP - Start Build @ 0.00°/100'                               |
| 5,112 30            | 4,973 36            | -11 97            | 320 00    | PP @ 5112 30 MD, 4973 36 TVD, 70 77 INC, 92 14 AZ, 320 22 VS |
| 5,272 54            | 5,000 00            | -17 84            | 477 13    | Landing Point - Hold @ 90 00° INC, 92 14° AZ                 |
| 9,780 55            | 5,000 00            | -186 30           | 4,982 00  | TD @ 9780 55' MD, 5000 00' TVD                               |



Azimuths to Grid North  
True North -0.08°  
Magnetic North 7.76°

Magnetic Field  
Strength 48787.9nT  
Dip Angle 80.57°  
Date 5/14/2012  
Model IGRF2010

**COG Operating LLC**  
**Big Girl 31 State 11H**  
**Eddy County, NM**  
**Plan #2**



| Surface Location |       | Ground Elev: 3667.00 WELL @ 3685.00ft (Original Well Elev) |           |             |               |
|------------------|-------|------------------------------------------------------------|-----------|-------------|---------------|
| +N/-S            | +E/-W | Northing                                                   | Easting   | Latitude    | Longitude     |
| 0.00             | 0.00  | 649252.30                                                  | 533917.00 | 32.78483326 | -104.22297492 |

| TARGET DETAILS                      |         |         |         |           |           |             |
|-------------------------------------|---------|---------|---------|-----------|-----------|-------------|
| Name                                | TVD     | +N/-S   | +E/-W   | Northing  | Easting   | Latitude    |
| PBHL (Big Girl 31 State 11H Plan 2) | 5000.00 | -186.30 | 4982.00 | 649086.00 | 538899.00 | 32.78430584 |

