



30-015-40814

## COG Operating LLC

Eddy County, New Mexico (NAD 27 NME)

Falabella 31 Fee

#1H

OH

Plan: Plan #1 06-26-13

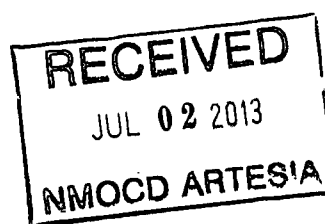
Surface: 150' FSL, 380' FWL, Sec 31, T18S, R26E, Lot 4

PP: 330' FSL, 380' FWL, Sec 31, T18S, R26E, Lot 4

BHL: 330' FNL, 380' FWL, Sec 31, T18S, R26E, Lot 1

## Standard Planning Report

26 June, 2013





Phoenix Technology Services  
Planning Report



|           |                                      |                              |                   |
|-----------|--------------------------------------|------------------------------|-------------------|
| Database: | GCR DB                               | Local Co-ordinate Reference: | Well #1H          |
| Company:  | COG Operating LLC                    | TVD Reference:               | GL @ 3440.00usft  |
| Project:  | Eddy County, New Mexico (NAD 27 NME) | MD Reference:                | GL @ 3440.00usft  |
| Site:     | Falabella 31 Fee                     | North Reference:             | Grid              |
| Well:     | #1H                                  | Survey Calculation Method:   | Minimum Curvature |
| Wellbore: | OH                                   |                              |                   |
| Design:   | Plan #1 06-26-13                     |                              |                   |

|             |                                      |               |                |
|-------------|--------------------------------------|---------------|----------------|
| Project:    | Eddy County, New Mexico (NAD 27 NME) |               |                |
| Map System: | US State Plane 1927 (Exact solution) | System Datum: | Mean Sea Level |
| Geo Datum:  | NAD 1927 (NADCON CONUS)              |               |                |
| Map Zone:   | New Mexico East 3001                 |               |                |

|                       |                  |                   |                      |
|-----------------------|------------------|-------------------|----------------------|
| Site:                 | Falabella 31 Fee |                   |                      |
| Site Position:        |                  | Northing:         | 617,359.30 usft      |
| From:                 | Map              | Easting:          | 472,777.20 usft      |
| Position Uncertainty: | 0.00 usft        | Slot Radius:      | 13-3/16 "            |
|                       |                  | Latitude:         | 32° 41' 49.876122 N  |
|                       |                  | Longitude:        | 104° 25' 18.575151 W |
|                       |                  | Grid Convergence: | -0.05 °              |

|                      |           |                |                     |
|----------------------|-----------|----------------|---------------------|
| Well:                | #1H       |                |                     |
| Well Position        | +N/-S     | 6.10 usft      | Northing:           |
|                      | +E/-W     | -1,842.40 usft | Easting:            |
| Position Uncertainty | 0.00 usft |                | Wellhead Elevation: |
|                      |           |                | Ground Level:       |
|                      |           |                | 3,440.00 usft       |

|           |             |             |                |
|-----------|-------------|-------------|----------------|
| Wellbore: | OH          |             |                |
| Magnetics | Model Name  | Sample Date | Declination    |
|           |             |             | (°)            |
|           | IGRF2010_14 | 01/30/13    | 7.82           |
|           |             |             | Dip Angle      |
|           |             |             | (°)            |
|           |             |             | 60.44          |
|           |             |             | Field Strength |
|           |             |             | (nT)           |
|           |             |             | 48,643         |

|                   |                  |        |               |
|-------------------|------------------|--------|---------------|
| Design:           | Plan #1 06-26-13 |        |               |
| Audit Notes:      |                  |        |               |
| Version:          | Phase:           | PLAN   | Tie On Depth: |
|                   |                  |        | 0.00          |
| Vertical Section: | Depth From (TVD) | +N/-S  | +E/-W         |
|                   | (usft)           | (usft) | (usft)        |
|                   | 0.00             | 0.00   | 0.00          |
|                   |                  |        | Direction     |
|                   |                  |        | (°)           |
|                   |                  |        | 0.16          |

|                |             |         |                |          |        |             |             |             |      |                      |
|----------------|-------------|---------|----------------|----------|--------|-------------|-------------|-------------|------|----------------------|
| Plan Sections  |             |         |                |          |        |             |             |             |      |                      |
| Measured Depth | Inclination | Azimuth | Vertical Depth | +N/-S    | +E/-W  | Dogleg Rate | Build Rate  | Turn Rate   | TFO  | Target               |
| (usft)         | (°)         | (°)     | (usft)         | (usft)   | (usft) | (°/100usft) | (°/100usft) | (°/100usft) | (°)  |                      |
| 0.00           | 0.00        | 0.00    | 0.00           | 0.00     | 0.00   | 0.00        | 0.00        | 0.00        | 0.00 |                      |
| 2,310.64       | 0.00        | 0.00    | 2,310.64       | 0.00     | 0.00   | 0.00        | 0.00        | 0.00        | 0.00 |                      |
| 3,147.00       | 92.00       | 0.16    | 2,831.19       | 539.05   | 1.47   | 11.00       | 11.00       | 0.00        | 0.16 |                      |
| 7,447.69       | 92.00       | 0.16    | 2,681.10       | 4,837.10 | 13.20  | 0.00        | 0.00        | 0.00        | 0.00 | PBHL-Falabella 31 #1 |



Phoenix Technology Services  
Planning Report



|           |                                      |                              |                   |
|-----------|--------------------------------------|------------------------------|-------------------|
| Database: | GCR DB                               | Local Co-ordinate Reference: | Well #1H          |
| Company:  | COG Operating LLC                    | TVD Reference:               | GL @ 3440.00usft  |
| Project:  | Eddy County, New Mexico (NAD 27 NME) | MD Reference:                | GL @ 3440.00usft  |
| Site:     | Falabella 31 Fee                     | North Reference:             | Grid              |
| Well:     | #1H                                  | Survey Calculation Method:   | Minimum Curvature |
| Wellbore: | OH                                   |                              |                   |
| Design:   | Plan #1-06-26-13                     |                              |                   |

| Planned Survey:                     |                    |                |                             |                 |                 |                               |                               |                              |                             |  |
|-------------------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|--|
| Measured<br>Depth<br>(usft)         | Inclination<br>(°) | Azimuth<br>(°) | Vertical<br>Depth<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Vertical<br>Section<br>(usft) | Dogleg<br>Rate<br>(°/100usft) | Build<br>Rate<br>(°/100usft) | Turn<br>Rate<br>(°/100usft) |  |
| 0.00                                | 0.00               | 0.00           | 0.00                        | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        |  |
| 2,310.64                            | 0.00               | 0.00           | 2,310.64                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        |  |
| KOP Start Build 11.00               |                    |                |                             |                 |                 |                               |                               |                              |                             |  |
| 2,400.00                            | 9.83               | 0.16           | 2,399.56                    | 7.65            | 0.02            | 7.65                          | 11.00                         | 11.00                        | 0.00                        |  |
| 2,500.00                            | 20.83              | 0.16           | 2,495.86                    | 34.04           | 0.09            | 34.04                         | 11.00                         | 11.00                        | 0.00                        |  |
| 2,600.00                            | 31.83              | 0.16           | 2,585.34                    | 78.33           | 0.21            | 78.33                         | 11.00                         | 11.00                        | 0.00                        |  |
| 2,700.00                            | 42.83              | 0.16           | 2,664.74                    | 138.88          | 0.38            | 138.88                        | 11.00                         | 11.00                        | 0.00                        |  |
| 2,757.23                            | 49.13              | 0.16           | 2,704.49                    | 180.01          | 0.49            | 180.01                        | 11.00                         | 11.00                        | 0.00                        |  |
| PP-Falabella 31 #1H                 |                    |                |                             |                 |                 |                               |                               |                              |                             |  |
| 2,800.00                            | 53.83              | 0.16           | 2,731.12                    | 213.46          | 0.58            | 213.46                        | 11.00                         | 11.00                        | 0.00                        |  |
| 2,900.00                            | 64.83              | 0.16           | 2,782.05                    | 299.34          | 0.82            | 299.34                        | 11.00                         | 11.00                        | 0.00                        |  |
| 3,000.00                            | 75.83              | 0.16           | 2,815.66                    | 393.36          | 1.07            | 393.36                        | 11.00                         | 11.00                        | 0.00                        |  |
| 3,100.00                            | 86.83              | 0.16           | 2,830.71                    | 492.06          | 1.34            | 492.07                        | 11.00                         | 11.00                        | 0.00                        |  |
| 3,142.94                            | 91.55              | 0.16           | 2,831.32                    | 534.98          | 1.46            | 534.98                        | 11.00                         | 11.00                        | 0.00                        |  |
| TL 2850' TVD @ 0 VZ, 92.0°          |                    |                |                             |                 |                 |                               |                               |                              |                             |  |
| 3,147.00                            | 92.00              | 0.16           | 2,831.19                    | 539.05          | 1.47            | 539.05                        | 11.00                         | 11.00                        | 0.00                        |  |
| LP Start 4300.69 hold at 3147.00 MD |                    |                |                             |                 |                 |                               |                               |                              |                             |  |
| 3,200.00                            | 92.00              | 0.16           | 2,829.34                    | 592.01          | 1.62            | 592.01                        | 0.00                          | 0.00                         | 0.00                        |  |
| 3,300.00                            | 92.00              | 0.16           | 2,825.85                    | 691.95          | 1.89            | 691.95                        | 0.00                          | 0.00                         | 0.00                        |  |
| 3,400.00                            | 92.00              | 0.16           | 2,822.36                    | 791.89          | 2.16            | 791.89                        | 0.00                          | 0.00                         | 0.00                        |  |
| 3,500.00                            | 92.00              | 0.16           | 2,818.87                    | 891.83          | 2.43            | 891.83                        | 0.00                          | 0.00                         | 0.00                        |  |
| 3,600.00                            | 92.00              | 0.16           | 2,815.38                    | 991.77          | 2.71            | 991.77                        | 0.00                          | 0.00                         | 0.00                        |  |
| 3,700.00                            | 92.00              | 0.16           | 2,811.89                    | 1,091.71        | 2.98            | 1,091.71                      | 0.00                          | 0.00                         | 0.00                        |  |
| 3,800.00                            | 92.00              | 0.16           | 2,808.40                    | 1,191.64        | 3.25            | 1,191.65                      | 0.00                          | 0.00                         | 0.00                        |  |
| 3,900.00                            | 92.00              | 0.16           | 2,804.91                    | 1,291.58        | 3.52            | 1,291.59                      | 0.00                          | 0.00                         | 0.00                        |  |
| 4,000.00                            | 92.00              | 0.16           | 2,801.42                    | 1,391.52        | 3.80            | 1,391.53                      | 0.00                          | 0.00                         | 0.00                        |  |
| 4,100.00                            | 92.00              | 0.16           | 2,797.93                    | 1,491.46        | 4.07            | 1,491.47                      | 0.00                          | 0.00                         | 0.00                        |  |
| 4,200.00                            | 92.00              | 0.16           | 2,794.44                    | 1,591.40        | 4.34            | 1,591.41                      | 0.00                          | 0.00                         | 0.00                        |  |
| 4,300.00                            | 92.00              | 0.16           | 2,790.95                    | 1,691.34        | 4.62            | 1,691.34                      | 0.00                          | 0.00                         | 0.00                        |  |
| 4,400.00                            | 92.00              | 0.16           | 2,787.46                    | 1,791.28        | 4.89            | 1,791.28                      | 0.00                          | 0.00                         | 0.00                        |  |
| 4,500.00                            | 92.00              | 0.16           | 2,783.97                    | 1,891.22        | 5.16            | 1,891.22                      | 0.00                          | 0.00                         | 0.00                        |  |
| 4,600.00                            | 92.00              | 0.16           | 2,780.48                    | 1,991.15        | 5.43            | 1,991.16                      | 0.00                          | 0.00                         | 0.00                        |  |
| 4,700.00                            | 92.00              | 0.16           | 2,776.99                    | 2,091.09        | 5.71            | 2,091.10                      | 0.00                          | 0.00                         | 0.00                        |  |
| 4,800.00                            | 92.00              | 0.16           | 2,773.50                    | 2,191.03        | 5.98            | 2,191.04                      | 0.00                          | 0.00                         | 0.00                        |  |
| 4,900.00                            | 92.00              | 0.16           | 2,770.01                    | 2,290.97        | 6.25            | 2,290.98                      | 0.00                          | 0.00                         | 0.00                        |  |
| 5,000.00                            | 92.00              | 0.16           | 2,766.52                    | 2,390.91        | 6.52            | 2,390.92                      | 0.00                          | 0.00                         | 0.00                        |  |
| 5,100.00                            | 92.00              | 0.16           | 2,763.03                    | 2,490.85        | 6.80            | 2,490.86                      | 0.00                          | 0.00                         | 0.00                        |  |
| 5,200.00                            | 92.00              | 0.16           | 2,759.54                    | 2,590.79        | 7.07            | 2,590.80                      | 0.00                          | 0.00                         | 0.00                        |  |
| 5,300.00                            | 92.00              | 0.16           | 2,756.05                    | 2,690.73        | 7.34            | 2,690.74                      | 0.00                          | 0.00                         | 0.00                        |  |
| 5,400.00                            | 92.00              | 0.16           | 2,752.56                    | 2,790.66        | 7.62            | 2,790.67                      | 0.00                          | 0.00                         | 0.00                        |  |
| 5,500.00                            | 92.00              | 0.16           | 2,749.07                    | 2,890.60        | 7.89            | 2,890.61                      | 0.00                          | 0.00                         | 0.00                        |  |
| 5,600.00                            | 92.00              | 0.16           | 2,745.58                    | 2,990.54        | 8.16            | 2,990.55                      | 0.00                          | 0.00                         | 0.00                        |  |
| 5,700.00                            | 92.00              | 0.16           | 2,742.09                    | 3,090.48        | 8.43            | 3,090.49                      | 0.00                          | 0.00                         | 0.00                        |  |
| 5,800.00                            | 92.00              | 0.16           | 2,738.60                    | 3,190.42        | 8.71            | 3,190.43                      | 0.00                          | 0.00                         | 0.00                        |  |
| 5,900.00                            | 92.00              | 0.16           | 2,735.11                    | 3,290.36        | 8.98            | 3,290.37                      | 0.00                          | 0.00                         | 0.00                        |  |
| 6,000.00                            | 92.00              | 0.16           | 2,731.62                    | 3,390.30        | 9.25            | 3,390.31                      | 0.00                          | 0.00                         | 0.00                        |  |
| 6,100.00                            | 92.00              | 0.16           | 2,728.13                    | 3,490.23        | 9.52            | 3,490.25                      | 0.00                          | 0.00                         | 0.00                        |  |
| 6,200.00                            | 92.00              | 0.16           | 2,724.64                    | 3,590.17        | 9.80            | 3,590.19                      | 0.00                          | 0.00                         | 0.00                        |  |
| 6,300.00                            | 92.00              | 0.16           | 2,721.15                    | 3,690.11        | 10.07           | 3,690.13                      | 0.00                          | 0.00                         | 0.00                        |  |
| 6,400.00                            | 92.00              | 0.16           | 2,717.66                    | 3,790.05        | 10.34           | 3,790.07                      | 0.00                          | 0.00                         | 0.00                        |  |
| 6,500.00                            | 92.00              | 0.16           | 2,714.17                    | 3,889.99        | 10.62           | 3,890.00                      | 0.00                          | 0.00                         | 0.00                        |  |
| 6,600.00                            | 92.00              | 0.16           | 2,710.68                    | 3,989.93        | 10.89           | 3,989.94                      | 0.00                          | 0.00                         | 0.00                        |  |
| 6,700.00                            | 92.00              | 0.16           | 2,707.19                    | 4,089.87        | 11.16           | 4,089.88                      | 0.00                          | 0.00                         | 0.00                        |  |
| 6,800.00                            | 92.00              | 0.16           | 2,703.70                    | 4,189.81        | 11.43           | 4,189.82                      | 0.00                          | 0.00                         | 0.00                        |  |



Phoenix Technology Services  
Planning Report



|           |                                      |                              |                   |
|-----------|--------------------------------------|------------------------------|-------------------|
| Database: | GCR DB                               | Local Co-ordinate Reference: | Well #1H          |
| Company:  | COG Operating LLC                    | TVD Reference:               | GL @ 3440.00usft  |
| Project:  | Eddy County, New Mexico (NAD 27 NME) | MD Reference:                | GL @ 3440.00usft  |
| Site:     | Falabella 31 Fee                     | North Reference:             | Grid              |
| Well:     | #1H                                  | Survey Calculation Method:   | Minimum Curvature |
| Wellbore: | OH                                   |                              |                   |
| Design:   | Plan #1 06-26-13                     |                              |                   |

| 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) |
| 6,900.00                              | 92.00           | 0.16        | 2,700.21              | 4,289.74     | 11.71        | 4,289.76                | 0.00                    | 0.00                   | 0.00                  |
| 7,000.00                              | 92.00           | 0.16        | 2,696.72              | 4,389.68     | 11.98        | 4,389.70                | 0.00                    | 0.00                   | 0.00                  |
| 7,100.00                              | 92.00           | 0.16        | 2,693.23              | 4,489.62     | 12.25        | 4,489.64                | 0.00                    | 0.00                   | 0.00                  |
| 7,200.00                              | 92.00           | 0.16        | 2,689.74              | 4,589.56     | 12.52        | 4,589.58                | 0.00                    | 0.00                   | 0.00                  |
| 7,300.00                              | 92.00           | 0.16        | 2,686.25              | 4,689.50     | 12.80        | 4,689.52                | 0.00                    | 0.00                   | 0.00                  |
| 7,400.00                              | 92.00           | 0.16        | 2,682.76              | 4,789.44     | 13.07        | 4,789.46                | 0.00                    | 0.00                   | 0.00                  |
| 7,447.69                              | 92.00           | 0.16        | 2,681.10              | 4,837.10     | 13.20        | 4,837.12                | 0.00                    | 0.00                   | 0.00                  |
| TD at 7447.69 - PBHL-Falabella 31 #1H |                 |             |                       |              |              |                         |                         |                        |                       |

| Design Targets        |                           |               |              |            |              |              |                 |                |                                          |
|-----------------------|---------------------------|---------------|--------------|------------|--------------|--------------|-----------------|----------------|------------------------------------------|
| Target Name           | hit/miss target           | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) |                                          |
| PBHL-Falabella 31 #1H | - plan hits target center | 0.00          | 360.00       | 2,681.10   | 4,837.10     | 13.20        | 622,202.50      | 470,948.00     | 32° 42' 37.786912 N 104° 25' 40.031844 W |
| PP-Falabella 31 #1H   | - plan hits target center | 0.00          | 360.00       | 2,704.48   | 180.00       | 0.49         | 617,545.40      | 470,935.29     | 32° 41' 51.701974 N 104° 25' 40.132027 W |
|                       | - Point                   |               |              |            |              |              |                 |                |                                          |

| Formations            |                       |                             |           |         |                   |
|-----------------------|-----------------------|-----------------------------|-----------|---------|-------------------|
| Measured Depth (usft) | Vertical Depth (usft) | Name                        | Lithology | Dip (°) | Dip Direction (°) |
| 3,142.94              | 2,831.32              | TL, 2850' TVD @ 0 VZ, 92.0° |           | -2.00   | 0.16              |

| Plan Annotations      |                       |                   |              |                                     |
|-----------------------|-----------------------|-------------------|--------------|-------------------------------------|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |              | Comment                             |
|                       |                       | +N/-S (usft)      | +E/-W (usft) |                                     |
| 2,310.64              | 2,310.64              | 0.00              | 0.00         | KOP Start Build 11.00               |
| 3,147.00              | 2,831.19              | 539.05            | 1.47         | LP Start 4300.69 hold at 3147.00 MD |
| 7,447.69              | 2,681.10              | 4,837.10          | 13.20        | TD at 7447.69                       |



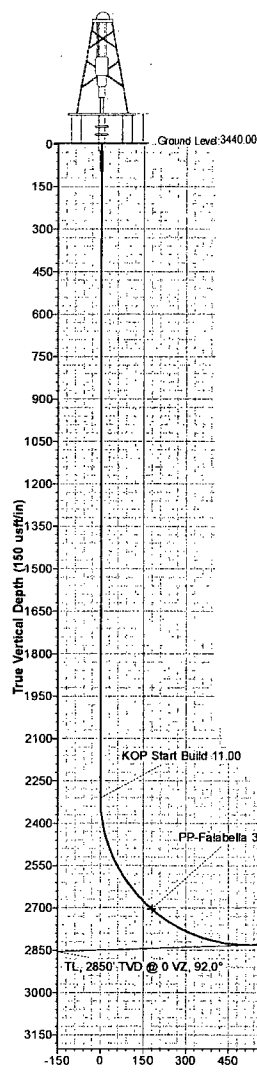
Project: Eddy County, New Mexico (NAD 27 NME)  
Site: Falabella 31 Fee  
Well: #1H  
Wellbore: OH  
Design: Plan #1 06-26-13



PHOENIX  
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Azimuths to Grid North  
True North: 0.06°  
Magnetic North: 7.87°  
Magnetic Field  
Strength: 48642.0nT  
Dip Angle: 60.44°  
Date: 01/30/2013  
Model: IGRF2010\_14



| WELL DETAILS |      |               |           |                     |                      |  |  |  |  |
|--------------|------|---------------|-----------|---------------------|----------------------|--|--|--|--|
|              |      | Ground Level: | 3440.00   |                     |                      |  |  |  |  |
| +N-S         | +E-W | Northing      | Easting   | Latitude            | Longitude            |  |  |  |  |
| 0.00         | 0.00 | 617365.40     | 470634.80 | 32° 41' 49.920759 N | 104° 25' 40.135898 W |  |  |  |  |

| SECTION DETAILS                     |         |       |      |         |         |       |       |       |         |
|-------------------------------------|---------|-------|------|---------|---------|-------|-------|-------|---------|
| Sec                                 | MD      | Inc   | Azi  | TVD     | +N-S    | +E-W  | Deg   | 1Face | Vsect   |
| 1                                   | 0.00    | 0.00  | 0.00 | 0.00    | 0.00    | 0.00  | 0.00  | 0.00  | 0.00    |
| 2                                   | 2310.64 | 0.00  | 0.00 | 2310.64 | 0.00    | 0.00  | 0.00  | 0.00  | 0.00    |
| 3                                   | 3147.00 | 92.00 | 0.16 | 2831.19 | 539.05  | 1.47  | 11.00 | 0.16  | 539.05  |
| 4                                   | 7447.69 | 92.00 | 0.16 | 2681.10 | 4837.10 | 13.20 | 0.00  | 0.00  | 4837.12 |
| PBHL-Falabella 31 #1H               |         |       |      |         |         |       |       |       |         |
| KOP Start Build 11.00               |         |       |      |         |         |       |       |       |         |
| LP Start 4300.69 hold at 3147.00 MD |         |       |      |         |         |       |       |       |         |
| TD at 7447.69                       |         |       |      |         |         |       |       |       |         |

| DESIGN TARGET DETAILS     |         |         |       |           |           |                     |                      |       |  |
|---------------------------|---------|---------|-------|-----------|-----------|---------------------|----------------------|-------|--|
| Name                      | TVD     | +N-S    | +E-W  | Northing  | Easting   | Latitude            | Longitude            | Shape |  |
| PBHL-Falabella 31 #1H     | 2681.10 | 4837.10 | 13.20 | 622202.50 | 470948.00 | 32° 42' 37.786912 N | 104° 25' 40.031844 W | Point |  |
| - plan hits target center |         |         |       |           |           |                     |                      |       |  |
| PP-Falabella 31 #1H       | 2704.48 | 180.00  | 0.49  | 617545.40 | 470936.29 | 32° 41' 51.701974 N | 104° 25' 40.132027 W | Point |  |
| - plan hits target center |         |         |       |           |           |                     |                      |       |  |

**PROJECT DETAILS:** Eddy County, New Mexico (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:** Falabella 31 Fee  
Site Centre Northing: 617359.30  
Easting: 472777.20  
Positional Uncertainty: 0.00  
Convergence: -0.05  
Local North: Grid

**LEGEND**  
— Plan #1 06-26-13

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 #1H, Grid North  
Latitude: 32° 41' 49.920759 N  
Longitude: 104° 25' 40.135898 W  
Grid East: 470934.80  
Grid North: 617365.40  
Scale Factor: 1.000  
Geomagnetic Model: IGRF2010\_14  
Sample Date: 30-Jan-13  
Magnetic Declination: 7.82°  
Dip Angle from Horizontal: 60.44°  
Magnetic Field Strength: 48643  
To convert a Magnetic Direction to a Grid Direction, Add 7.87°  
To convert a Magnetic Direction to a True Direction, Add 7.82° East  
To convert a True Direction to a Grid Direction, Add 0.05°

| FORMATION TOP DETAILS |         |           |                         |                         |          |
|-----------------------|---------|-----------|-------------------------|-------------------------|----------|
| TVDPath               | MDPath  | Formation | TL                      | 2850' TVD @ 0 VZ, 92.0° | DipAngle |
| 2831.32               | 3142.94 | TL        | 2850' TVD @ 0 VZ, 92.0° | -2.00                   | DipDir   |
|                       |         |           |                         |                         | 0.16     |

