



CONCHO

NM OIL CONSERVATION  
ARTESIA DISTRICT

FEB 13 2019

RECEIVED

## COG Operating L L C

Eddy County, NM (NAD 27 NME)

Sec. 24, T 25S. , R 27 E

Daisy State Com #503H

Wellbore #1

30.015-45747

Plan: Plan #1

## Standard Survey Report

06 February, 2019



INTEGRITY  
DIRECTIONAL

**Company:** COG Operating L L C  
**Project:** Eddy County, NM (NAD 27 NME)  
**Site:** Sec. 24, T 25S. , R 27 E  
**Well:** Daisy State Com #503H  
**Wellbore:** Wellbore #1  
**Design:** Plan #1

**Local Co-ordinate Reference:** Well Daisy State Com #503H  
**TVD Reference:** KB=26' @ 3083.00usft (Scandril Freedom)  
**MD Reference:** KB=26' @ 3083.00usft (Scandril Freedom)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 5000.1

|                    |                                      |                      |                |
|--------------------|--------------------------------------|----------------------|----------------|
| <b>Project</b>     | Eddy County, NM (NAD 27 NME)         |                      |                |
| <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>                  | Sec. 24, T 25S. , R 27 E |                          |                 |
| <b>Site Position:</b>        |                          | <b>Northing:</b>         | 408,345.40 usft |
| <b>From:</b>                 | Map                      | <b>Easting:</b>          | 556,167.10 usft |
| <b>Position Uncertainty:</b> | 0.00 usft                | <b>Slot Radius:</b>      | 13-3/16 "       |
|                              |                          | <b>Latitude:</b>         | 32.12253        |
|                              |                          | <b>Longitude:</b>        | -104.15191      |
|                              |                          | <b>Grid Convergence:</b> | 0.10 °          |

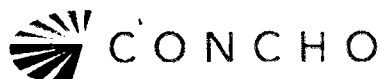
|                             |                       |                            |                                  |
|-----------------------------|-----------------------|----------------------------|----------------------------------|
| <b>Well</b>                 | Daisy State Com #503H |                            |                                  |
| <b>Well Position</b>        | <b>+N/-S</b>          | 0.00 usft                  | <b>Northing:</b> 408,084.80 usft |
|                             | <b>+E/-W</b>          | 0.00 usft                  | <b>Easting:</b> 558,137.70 usft  |
| <b>Position Uncertainty</b> | 0.00 usft             | <b>Wellhead Elevation:</b> | 0.00 usft                        |
|                             |                       | <b>Latitude:</b>           | 32.12180                         |
|                             |                       | <b>Longitude:</b>          | -104.14554                       |
|                             |                       | <b>Ground Level:</b>       | 3,057.00 usft                    |

|                  |                   |                            |                        |
|------------------|-------------------|----------------------------|------------------------|
| <b>Wellbore</b>  | Wellbore #1       |                            |                        |
| <b>Magnetics</b> | <b>Model Name</b> | <b>Sample Date</b>         | <b>Declination (°)</b> |
|                  | HDGM              | 12/31/2018                 | 7.23                   |
|                  |                   | <b>Dip Angle (°)</b>       | 59.83                  |
|                  |                   | <b>Field Strength (nT)</b> | 47,880                 |

|                          |                                |                      |                           |
|--------------------------|--------------------------------|----------------------|---------------------------|
| <b>Design</b>            | Plan #1                        |                      |                           |
| <b>Audit Notes:</b>      |                                |                      |                           |
| <b>Version:</b>          | <b>Phase:</b>                  | PLAN                 | <b>Tie On Depth:</b> 0.00 |
| <b>Vertical Section:</b> | <b>Depth From (TVD) (usft)</b> | <b>+N/-S (usft)</b>  | <b>+E/-W (usft)</b>       |
|                          | 0.00                           | 0.00                 | 0.00                      |
|                          |                                | <b>Direction (°)</b> | 182.37                    |

|                            |                  |                          |                    |
|----------------------------|------------------|--------------------------|--------------------|
| <b>Survey Tool Program</b> | Date 2/6/2019    |                          |                    |
| <b>From (usft)</b>         | <b>To (usft)</b> | <b>Survey (Wellbore)</b> | <b>Tool Name</b>   |
| 0.00                       | 18,068.52        | Plan #1 (Wellbore #1)    | MWD                |
|                            |                  |                          | <b>Description</b> |
|                            |                  |                          | MWD - Standard     |

| 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                  |
| 100.00                | 0.00            | 0.00        | 100.00                | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 200.00                | 0.00            | 0.00        | 200.00                | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 300.00                | 0.00            | 0.00        | 300.00                | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 400.00                | 0.00            | 0.00        | 400.00                | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 500.00                | 0.00            | 0.00        | 500.00                | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 600.00                | 0.00            | 0.00        | 600.00                | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 700.00                | 0.00            | 0.00        | 700.00                | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 800.00                | 0.00            | 0.00        | 800.00                | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 900.00                | 0.00            | 0.00        | 900.00                | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |



## Survey Report



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**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 5000.1

## 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) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 1,000.00              | 0.00            | 0.00        | 1,000.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 1,100.00              | 0.00            | 0.00        | 1,100.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 1,200.00              | 0.00            | 0.00        | 1,200.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 1,300.00              | 0.00            | 0.00        | 1,300.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 1,400.00              | 0.00            | 0.00        | 1,400.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 1,500.00              | 0.00            | 0.00        | 1,500.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 1,600.00              | 0.00            | 0.00        | 1,600.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 1,700.00              | 0.00            | 0.00        | 1,700.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 1,800.00              | 0.00            | 0.00        | 1,800.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 1,900.00              | 0.00            | 0.00        | 1,900.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 2,000.00              | 0.00            | 0.00        | 2,000.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 2,100.00              | 0.00            | 0.00        | 2,100.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 2,200.00              | 0.00            | 0.00        | 2,200.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 2,300.00              | 0.00            | 0.00        | 2,300.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 2,400.00              | 0.00            | 0.00        | 2,400.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 2,500.00              | 0.00            | 0.00        | 2,500.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 2,600.00              | 0.00            | 0.00        | 2,600.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 2,700.00              | 0.00            | 0.00        | 2,700.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 2,800.00              | 0.00            | 0.00        | 2,800.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 2,900.00              | 0.00            | 0.00        | 2,900.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 3,000.00              | 0.00            | 0.00        | 3,000.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 3,100.00              | 0.00            | 0.00        | 3,100.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 3,200.00              | 0.00            | 0.00        | 3,200.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 3,300.00              | 0.00            | 0.00        | 3,300.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 3,400.00              | 0.00            | 0.00        | 3,400.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 3,500.00              | 0.00            | 0.00        | 3,500.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 3,600.00              | 0.00            | 0.00        | 3,600.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 3,700.00              | 0.00            | 0.00        | 3,700.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 3,800.00              | 0.00            | 0.00        | 3,800.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 3,900.00              | 0.00            | 0.00        | 3,900.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 4,000.00              | 0.00            | 0.00        | 4,000.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 4,100.00              | 0.00            | 0.00        | 4,100.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 4,200.00              | 0.00            | 0.00        | 4,200.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 4,300.00              | 0.00            | 0.00        | 4,300.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 4,400.00              | 0.00            | 0.00        | 4,400.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 4,500.00              | 0.00            | 0.00        | 4,500.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 4,600.00              | 0.00            | 0.00        | 4,600.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 4,700.00              | 0.00            | 0.00        | 4,700.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 4,800.00              | 0.00            | 0.00        | 4,800.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 4,900.00              | 0.00            | 0.00        | 4,900.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 5,000.00              | 0.00            | 0.00        | 5,000.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 5,100.00              | 0.00            | 0.00        | 5,100.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 5,200.00              | 0.00            | 0.00        | 5,200.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 5,300.00              | 0.00            | 0.00        | 5,300.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |

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| Measured Depth (usft)                   | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Bulld Rate (°/100usft) | Turn Rate (°/100usft) |
|-----------------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 5,400.00                                | 0.00            | 0.00        | 5,400.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 5,500.00                                | 0.00            | 0.00        | 5,500.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 5,600.00                                | 0.00            | 0.00        | 5,600.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| <b>Start Build 2.00</b>                 |                 |             |                       |              |              |                         |                         |                        |                       |
| 5,700.00                                | 2.00            | 309.31      | 5,699.98              | 1.11         | -1.35        | -1.05                   | 2.00                    | 2.00                   | 0.00                  |
| 5,800.00                                | 4.00            | 309.31      | 5,799.84              | 4.42         | -5.40        | -4.19                   | 2.00                    | 2.00                   | 0.00                  |
| 5,900.00                                | 6.00            | 309.31      | 5,899.45              | 9.94         | -12.14       | -9.43                   | 2.00                    | 2.00                   | 0.00                  |
| 6,000.00                                | 8.00            | 309.31      | 5,998.70              | 17.66        | -21.57       | -16.75                  | 2.00                    | 2.00                   | 0.00                  |
| 6,060.93                                | 9.22            | 309.31      | 6,058.95              | 23.44        | -28.63       | -22.24                  | 2.00                    | 2.00                   | 0.00                  |
| <b>Start 1148.54 hold at 6060.93 MD</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 6,100.00                                | 9.22            | 309.31      | 6,097.51              | 27.40        | -33.47       | -26.00                  | 0.00                    | 0.00                   | 0.00                  |
| 6,200.00                                | 9.22            | 309.31      | 6,196.22              | 37.55        | -45.87       | -35.63                  | 0.00                    | 0.00                   | 0.00                  |
| 6,300.00                                | 9.22            | 309.31      | 6,294.93              | 47.70        | -58.26       | -45.25                  | 0.00                    | 0.00                   | 0.00                  |
| 6,400.00                                | 9.22            | 309.31      | 6,393.63              | 57.85        | -70.66       | -54.88                  | 0.00                    | 0.00                   | 0.00                  |
| 6,500.00                                | 9.22            | 309.31      | 6,492.34              | 68.00        | -83.06       | -64.51                  | 0.00                    | 0.00                   | 0.00                  |
| 6,600.00                                | 9.22            | 309.31      | 6,591.05              | 78.15        | -95.45       | -74.14                  | 0.00                    | 0.00                   | 0.00                  |
| 6,700.00                                | 9.22            | 309.31      | 6,689.76              | 88.30        | -107.85      | -83.76                  | 0.00                    | 0.00                   | 0.00                  |
| 6,800.00                                | 9.22            | 309.31      | 6,788.47              | 98.44        | -120.24      | -93.39                  | 0.00                    | 0.00                   | 0.00                  |
| 6,900.00                                | 9.22            | 309.31      | 6,887.18              | 108.59       | -132.64      | -103.02                 | 0.00                    | 0.00                   | 0.00                  |
| 7,000.00                                | 9.22            | 309.31      | 6,985.89              | 118.74       | -145.03      | -112.65                 | 0.00                    | 0.00                   | 0.00                  |
| 7,100.00                                | 9.22            | 309.31      | 7,084.59              | 128.89       | -157.43      | -122.27                 | 0.00                    | 0.00                   | 0.00                  |
| 7,200.00                                | 9.22            | 309.31      | 7,183.30              | 139.04       | -169.83      | -131.90                 | 0.00                    | 0.00                   | 0.00                  |
| 7,209.47                                | 9.22            | 309.31      | 7,192.65              | 140.00       | -171.00      | -132.81                 | 0.00                    | 0.00                   | 0.00                  |
| <b>Start DLS 10.00 TFO -109.08</b>      |                 |             |                       |              |              |                         |                         |                        |                       |
| 7,300.00                                | 10.57           | 255.16      | 7,282.01              | 142.47       | -184.67      | -134.72                 | 10.00                   | 1.49                   | -59.82                |
| 7,400.00                                | 18.18           | 227.81      | 7,378.92              | 129.61       | -205.14      | -121.02                 | 10.00                   | 7.60                   | -27.35                |
| 7,500.00                                | 27.34           | 217.23      | 7,471.07              | 100.78       | -230.66      | -91.16                  | 10.00                   | 9.16                   | -10.57                |
| 7,600.00                                | 36.92           | 211.76      | 7,555.68              | 56.86        | -260.44      | -46.04                  | 10.00                   | 9.58                   | -5.47                 |
| 7,700.00                                | 46.65           | 208.31      | 7,630.16              | -0.83        | -293.57      | 12.97                   | 10.00                   | 9.74                   | -3.45                 |
| 7,800.00                                | 56.46           | 205.83      | 7,692.27              | -70.53       | -329.07      | 84.07                   | 10.00                   | 9.81                   | -2.49                 |
| 7,900.00                                | 66.31           | 203.85      | 7,740.11              | -150.12      | -365.83      | 165.12                  | 10.00                   | 9.85                   | -1.97                 |
| 8,000.00                                | 76.18           | 202.16      | 7,772.22              | -237.19      | -402.75      | 253.63                  | 10.00                   | 9.87                   | -1.69                 |
| 8,100.00                                | 86.06           | 200.60      | 7,787.63              | -329.08      | -438.71      | 346.93                  | 10.00                   | 9.88                   | -1.56                 |
| 8,139.83                                | 90.00           | 200.00      | 7,789.00              | -366.41      | -452.52      | 384.80                  | 10.00                   | 9.88                   | -1.52                 |
| <b>Start DLS 4.00 TFO -89.66</b>        |                 |             |                       |              |              |                         |                         |                        |                       |
| 8,200.00                                | 90.01           | 197.59      | 7,788.99              | -423.36      | -471.91      | 442.50                  | 4.00                    | 0.02                   | -4.00                 |
| 8,300.00                                | 90.04           | 193.59      | 7,788.95              | -519.66      | -498.78      | 539.83                  | 4.00                    | 0.02                   | -4.00                 |
| 8,400.00                                | 90.06           | 189.59      | 7,788.86              | -617.60      | -518.88      | 638.52                  | 4.00                    | 0.02                   | -4.00                 |
| 8,500.00                                | 90.08           | 185.59      | 7,788.74              | -716.70      | -532.09      | 738.08                  | 4.00                    | 0.02                   | -4.00                 |
| 8,600.00                                | 90.11           | 181.59      | 7,788.57              | -816.49      | -538.35      | 838.04                  | 4.00                    | 0.02                   | -4.00                 |
| 8,657.09                                | 90.12           | 179.31      | 7,788.46              | -873.57      | -538.80      | 895.09                  | 4.00                    | 0.02                   | -4.00                 |
| <b>Start 9411.44 hold at 8657.09 MD</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 8,700.00                                | 90.12           | 179.31      | 7,788.37              | -916.48      | -538.29      | 937.94                  | 0.00                    | 0.00                   | 0.00                  |
| 8,800.00                                | 90.12           | 179.31      | 7,788.17              | -1,016.47    | -537.08      | 1,037.80                | 0.00                    | 0.00                   | 0.00                  |

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## Planned Survey

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Bulld Rate (°/100usft) | Turn Rate (°/100usft) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 8,900.00              | 90.12           | 179.31      | 7,787.96              | -1,116.46    | -535.88      | 1,137.66                | 0.00                    | 0.00                   | 0.00                  |
| 9,000.00              | 90.12           | 179.31      | 7,787.75              | -1,216.45    | -534.68      | 1,237.51                | 0.00                    | 0.00                   | 0.00                  |
| 9,100.00              | 90.12           | 179.31      | 7,787.55              | -1,316.45    | -533.47      | 1,337.37                | 0.00                    | 0.00                   | 0.00                  |
| 9,200.00              | 90.12           | 179.31      | 7,787.34              | -1,416.44    | -532.27      | 1,437.23                | 0.00                    | 0.00                   | 0.00                  |
| 9,300.00              | 90.12           | 179.31      | 7,787.13              | -1,516.43    | -531.06      | 1,537.09                | 0.00                    | 0.00                   | 0.00                  |
| 9,400.00              | 90.12           | 179.31      | 7,786.93              | -1,616.42    | -529.86      | 1,636.94                | 0.00                    | 0.00                   | 0.00                  |
| 9,500.00              | 90.12           | 179.31      | 7,786.72              | -1,716.42    | -528.66      | 1,736.80                | 0.00                    | 0.00                   | 0.00                  |
| 9,600.00              | 90.12           | 179.31      | 7,786.51              | -1,816.41    | -527.45      | 1,836.66                | 0.00                    | 0.00                   | 0.00                  |
| 9,700.00              | 90.12           | 179.31      | 7,786.30              | -1,916.40    | -526.25      | 1,936.52                | 0.00                    | 0.00                   | 0.00                  |
| 9,800.00              | 90.12           | 179.31      | 7,786.10              | -2,016.39    | -525.04      | 2,036.37                | 0.00                    | 0.00                   | 0.00                  |
| 9,900.00              | 90.12           | 179.31      | 7,785.89              | -2,116.39    | -523.84      | 2,136.23                | 0.00                    | 0.00                   | 0.00                  |
| 10,000.00             | 90.12           | 179.31      | 7,785.68              | -2,216.38    | -522.64      | 2,236.09                | 0.00                    | 0.00                   | 0.00                  |
| 10,100.00             | 90.12           | 179.31      | 7,785.48              | -2,316.37    | -521.43      | 2,335.95                | 0.00                    | 0.00                   | 0.00                  |
| 10,200.00             | 90.12           | 179.31      | 7,785.27              | -2,416.36    | -520.23      | 2,435.80                | 0.00                    | 0.00                   | 0.00                  |
| 10,300.00             | 90.12           | 179.31      | 7,785.06              | -2,516.36    | -519.03      | 2,535.66                | 0.00                    | 0.00                   | 0.00                  |
| 10,400.00             | 90.12           | 179.31      | 7,784.86              | -2,616.35    | -517.82      | 2,635.52                | 0.00                    | 0.00                   | 0.00                  |
| 10,500.00             | 90.12           | 179.31      | 7,784.65              | -2,716.34    | -516.62      | 2,735.37                | 0.00                    | 0.00                   | 0.00                  |
| 10,600.00             | 90.12           | 179.31      | 7,784.44              | -2,816.33    | -515.41      | 2,835.23                | 0.00                    | 0.00                   | 0.00                  |
| 10,700.00             | 90.12           | 179.31      | 7,784.24              | -2,916.33    | -514.21      | 2,935.09                | 0.00                    | 0.00                   | 0.00                  |
| 10,800.00             | 90.12           | 179.31      | 7,784.03              | -3,016.32    | -513.01      | 3,034.95                | 0.00                    | 0.00                   | 0.00                  |
| 10,900.00             | 90.12           | 179.31      | 7,783.82              | -3,116.31    | -511.80      | 3,134.80                | 0.00                    | 0.00                   | 0.00                  |
| 11,000.00             | 90.12           | 179.31      | 7,783.62              | -3,216.31    | -510.60      | 3,234.66                | 0.00                    | 0.00                   | 0.00                  |
| 11,100.00             | 90.12           | 179.31      | 7,783.41              | -3,316.30    | -509.39      | 3,334.52                | 0.00                    | 0.00                   | 0.00                  |
| 11,200.00             | 90.12           | 179.31      | 7,783.20              | -3,416.29    | -508.19      | 3,434.38                | 0.00                    | 0.00                   | 0.00                  |
| 11,300.00             | 90.12           | 179.31      | 7,783.00              | -3,516.28    | -506.99      | 3,534.23                | 0.00                    | 0.00                   | 0.00                  |
| 11,400.00             | 90.12           | 179.31      | 7,782.79              | -3,616.28    | -505.78      | 3,634.09                | 0.00                    | 0.00                   | 0.00                  |
| 11,500.00             | 90.12           | 179.31      | 7,782.58              | -3,716.27    | -504.58      | 3,733.95                | 0.00                    | 0.00                   | 0.00                  |
| 11,600.00             | 90.12           | 179.31      | 7,782.38              | -3,816.26    | -503.37      | 3,833.81                | 0.00                    | 0.00                   | 0.00                  |
| 11,700.00             | 90.12           | 179.31      | 7,782.17              | -3,916.25    | -502.17      | 3,933.66                | 0.00                    | 0.00                   | 0.00                  |
| 11,800.00             | 90.12           | 179.31      | 7,781.96              | -4,016.25    | -500.97      | 4,033.52                | 0.00                    | 0.00                   | 0.00                  |
| 11,900.00             | 90.12           | 179.31      | 7,781.76              | -4,116.24    | -499.76      | 4,133.38                | 0.00                    | 0.00                   | 0.00                  |
| 12,000.00             | 90.12           | 179.31      | 7,781.55              | -4,216.23    | -498.56      | 4,233.23                | 0.00                    | 0.00                   | 0.00                  |
| 12,100.00             | 90.12           | 179.31      | 7,781.34              | -4,316.22    | -497.36      | 4,333.09                | 0.00                    | 0.00                   | 0.00                  |
| 12,200.00             | 90.12           | 179.31      | 7,781.14              | -4,416.22    | -496.15      | 4,432.95                | 0.00                    | 0.00                   | 0.00                  |
| 12,300.00             | 90.12           | 179.31      | 7,780.93              | -4,516.21    | -494.95      | 4,532.81                | 0.00                    | 0.00                   | 0.00                  |
| 12,400.00             | 90.12           | 179.31      | 7,780.72              | -4,616.20    | -493.74      | 4,632.66                | 0.00                    | 0.00                   | 0.00                  |
| 12,500.00             | 90.12           | 179.31      | 7,780.51              | -4,716.19    | -492.54      | 4,732.52                | 0.00                    | 0.00                   | 0.00                  |
| 12,600.00             | 90.12           | 179.31      | 7,780.31              | -4,816.19    | -491.34      | 4,832.38                | 0.00                    | 0.00                   | 0.00                  |
| 12,700.00             | 90.12           | 179.31      | 7,780.10              | -4,916.18    | -490.13      | 4,932.24                | 0.00                    | 0.00                   | 0.00                  |
| 12,800.00             | 90.12           | 179.31      | 7,779.89              | -5,016.17    | -488.93      | 5,032.09                | 0.00                    | 0.00                   | 0.00                  |
| 12,900.00             | 90.12           | 179.31      | 7,779.69              | -5,116.16    | -487.72      | 5,131.95                | 0.00                    | 0.00                   | 0.00                  |
| 13,000.00             | 90.12           | 179.31      | 7,779.48              | -5,216.16    | -486.52      | 5,231.81                | 0.00                    | 0.00                   | 0.00                  |
| 13,100.00             | 90.12           | 179.31      | 7,779.27              | -5,316.15    | -485.32      | 5,331.67                | 0.00                    | 0.00                   | 0.00                  |

**Company:** COG Operating L L C  
**Project:** Eddy County, NM (NAD 27 NME)  
**Site:** Sec. 24, T 25S., R 27 E  
**Well:** Daisy State Com #503H  
**Wellbore:** Wellbore #1  
**Design:** Plan #1

**Local Co-ordinate Reference:** Well Daisy State Com #503H  
**TVD Reference:** KB=26' @ 3083.00usft (Scandril Freedom)  
**MD Reference:** KB=26' @ 3083.00usft (Scandril Freedom)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 5000.1

**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) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 13,200.00             | 90.12           | 179.31      | 7,779.07              | -5,416.14    | -484.11      | 5,431.52                | 0.00                    | 0.00                   | 0.00                  |
| 13,300.00             | 90.12           | 179.31      | 7,778.86              | -5,516.13    | -482.91      | 5,531.38                | 0.00                    | 0.00                   | 0.00                  |
| 13,400.00             | 90.12           | 179.31      | 7,778.65              | -5,616.13    | -481.70      | 5,631.24                | 0.00                    | 0.00                   | 0.00                  |
| 13,500.00             | 90.12           | 179.31      | 7,778.45              | -5,716.12    | -480.50      | 5,731.09                | 0.00                    | 0.00                   | 0.00                  |
| 13,600.00             | 90.12           | 179.31      | 7,778.24              | -5,816.11    | -479.30      | 5,830.95                | 0.00                    | 0.00                   | 0.00                  |
| 13,700.00             | 90.12           | 179.31      | 7,778.03              | -5,916.10    | -478.09      | 5,930.81                | 0.00                    | 0.00                   | 0.00                  |
| 13,800.00             | 90.12           | 179.31      | 7,777.83              | -6,016.10    | -476.89      | 6,030.67                | 0.00                    | 0.00                   | 0.00                  |
| 13,900.00             | 90.12           | 179.31      | 7,777.62              | -6,116.09    | -475.68      | 6,130.52                | 0.00                    | 0.00                   | 0.00                  |
| 14,000.00             | 90.12           | 179.31      | 7,777.41              | -6,216.08    | -474.48      | 6,230.38                | 0.00                    | 0.00                   | 0.00                  |
| 14,100.00             | 90.12           | 179.31      | 7,777.21              | -6,316.07    | -473.28      | 6,330.24                | 0.00                    | 0.00                   | 0.00                  |
| 14,200.00             | 90.12           | 179.31      | 7,777.00              | -6,416.07    | -472.07      | 6,430.10                | 0.00                    | 0.00                   | 0.00                  |
| 14,300.00             | 90.12           | 179.31      | 7,776.79              | -6,516.06    | -470.87      | 6,529.95                | 0.00                    | 0.00                   | 0.00                  |
| 14,400.00             | 90.12           | 179.31      | 7,776.59              | -6,616.05    | -469.67      | 6,629.81                | 0.00                    | 0.00                   | 0.00                  |
| 14,500.00             | 90.12           | 179.31      | 7,776.38              | -6,716.04    | -468.46      | 6,729.67                | 0.00                    | 0.00                   | 0.00                  |
| 14,600.00             | 90.12           | 179.31      | 7,776.17              | -6,816.04    | -467.26      | 6,829.52                | 0.00                    | 0.00                   | 0.00                  |
| 14,700.00             | 90.12           | 179.31      | 7,775.97              | -6,916.03    | -466.05      | 6,929.38                | 0.00                    | 0.00                   | 0.00                  |
| 14,800.00             | 90.12           | 179.31      | 7,775.76              | -7,016.02    | -464.85      | 7,029.24                | 0.00                    | 0.00                   | 0.00                  |
| 14,900.00             | 90.12           | 179.31      | 7,775.55              | -7,116.01    | -463.65      | 7,129.10                | 0.00                    | 0.00                   | 0.00                  |
| 15,000.00             | 90.12           | 179.31      | 7,775.35              | -7,216.01    | -462.44      | 7,228.95                | 0.00                    | 0.00                   | 0.00                  |
| 15,100.00             | 90.12           | 179.31      | 7,775.14              | -7,316.00    | -461.24      | 7,328.81                | 0.00                    | 0.00                   | 0.00                  |
| 15,200.00             | 90.12           | 179.31      | 7,774.93              | -7,415.99    | -460.03      | 7,428.67                | 0.00                    | 0.00                   | 0.00                  |
| 15,300.00             | 90.12           | 179.31      | 7,774.73              | -7,515.98    | -458.83      | 7,528.53                | 0.00                    | 0.00                   | 0.00                  |
| 15,400.00             | 90.12           | 179.31      | 7,774.52              | -7,615.98    | -457.63      | 7,628.38                | 0.00                    | 0.00                   | 0.00                  |
| 15,500.00             | 90.12           | 179.31      | 7,774.31              | -7,715.97    | -456.42      | 7,728.24                | 0.00                    | 0.00                   | 0.00                  |
| 15,600.00             | 90.12           | 179.31      | 7,774.10              | -7,815.96    | -455.22      | 7,828.10                | 0.00                    | 0.00                   | 0.00                  |
| 15,700.00             | 90.12           | 179.31      | 7,773.90              | -7,915.95    | -454.01      | 7,927.96                | 0.00                    | 0.00                   | 0.00                  |
| 15,800.00             | 90.12           | 179.31      | 7,773.69              | -8,015.95    | -452.81      | 8,027.81                | 0.00                    | 0.00                   | 0.00                  |
| 15,900.00             | 90.12           | 179.31      | 7,773.48              | -8,115.94    | -451.61      | 8,127.67                | 0.00                    | 0.00                   | 0.00                  |
| 16,000.00             | 90.12           | 179.31      | 7,773.28              | -8,215.93    | -450.40      | 8,227.53                | 0.00                    | 0.00                   | 0.00                  |
| 16,100.00             | 90.12           | 179.31      | 7,773.07              | -8,315.92    | -449.20      | 8,327.38                | 0.00                    | 0.00                   | 0.00                  |
| 16,200.00             | 90.12           | 179.31      | 7,772.86              | -8,415.92    | -448.00      | 8,427.24                | 0.00                    | 0.00                   | 0.00                  |
| 16,300.00             | 90.12           | 179.31      | 7,772.66              | -8,515.91    | -446.79      | 8,527.10                | 0.00                    | 0.00                   | 0.00                  |
| 16,400.00             | 90.12           | 179.31      | 7,772.45              | -8,615.90    | -445.59      | 8,626.96                | 0.00                    | 0.00                   | 0.00                  |
| 16,500.00             | 90.12           | 179.31      | 7,772.24              | -8,715.89    | -444.38      | 8,726.81                | 0.00                    | 0.00                   | 0.00                  |
| 16,600.00             | 90.12           | 179.31      | 7,772.04              | -8,815.89    | -443.18      | 8,826.67                | 0.00                    | 0.00                   | 0.00                  |
| 16,700.00             | 90.12           | 179.31      | 7,771.83              | -8,915.88    | -441.98      | 8,926.53                | 0.00                    | 0.00                   | 0.00                  |
| 16,800.00             | 90.12           | 179.31      | 7,771.62              | -9,015.87    | -440.77      | 9,026.39                | 0.00                    | 0.00                   | 0.00                  |
| 16,900.00             | 90.12           | 179.31      | 7,771.42              | -9,115.87    | -439.57      | 9,126.24                | 0.00                    | 0.00                   | 0.00                  |
| 17,000.00             | 90.12           | 179.31      | 7,771.21              | -9,215.86    | -438.36      | 9,226.10                | 0.00                    | 0.00                   | 0.00                  |
| 17,100.00             | 90.12           | 179.31      | 7,771.00              | -9,315.85    | -437.16      | 9,325.96                | 0.00                    | 0.00                   | 0.00                  |
| 17,200.00             | 90.12           | 179.31      | 7,770.80              | -9,415.84    | -435.96      | 9,425.82                | 0.00                    | 0.00                   | 0.00                  |
| 17,300.00             | 90.12           | 179.31      | 7,770.59              | -9,515.84    | -434.75      | 9,525.67                | 0.00                    | 0.00                   | 0.00                  |
| 17,400.00             | 90.12           | 179.31      | 7,770.38              | -9,615.83    | -433.55      | 9,625.53                | 0.00                    | 0.00                   | 0.00                  |
| 17,500.00             | 90.12           | 179.31      | 7,770.18              | -9,715.82    | -432.34      | 9,725.39                | 0.00                    | 0.00                   | 0.00                  |

**Company:** COG Operating L L C  
**Project:** Eddy County, NM (NAD 27 NME)  
**Site:** Sec. 24, T 25S. , R 27 E  
**Well:** Daisy State Com #503H  
**Wellbore:** Wellbore #1  
**Design:** Plan #1

**Local Co-ordinate Reference:** Well Daisy State Com #503H  
**TVD Reference:** KB=26' @ 3083.00usft (Scandril Freedom)  
**MD Reference:** KB=26' @ 3083.00usft (Scandril Freedom)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 5000.1

## 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) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 17,600.00             | 90.12           | 179.31      | 7,769.97              | -9,815.81    | -431.14      | 9,825.24                | 0.00                    | 0.00                   | 0.00                  |
| 17,700.00             | 90.12           | 179.31      | 7,769.76              | -9,915.81    | -429.94      | 9,925.10                | 0.00                    | 0.00                   | 0.00                  |
| 17,800.00             | 90.12           | 179.31      | 7,769.56              | -10,015.80   | -428.73      | 10,024.96               | 0.00                    | 0.00                   | 0.00                  |
| 17,900.00             | 90.12           | 179.31      | 7,769.35              | -10,115.79   | -427.53      | 10,124.82               | 0.00                    | 0.00                   | 0.00                  |
| 18,000.00             | 90.12           | 179.31      | 7,769.14              | -10,215.78   | -426.32      | 10,224.67               | 0.00                    | 0.00                   | 0.00                  |
| 18,068.52             | 90.12           | 179.31      | 7,769.00              | -10,284.30   | -425.50      | 10,293.10               | 0.00                    | 0.00                   | 0.00                  |
| TD at 18068.52        |                 |             |                       |              |              |                         |                         |                        |                       |

## Design Targets

### Target Name

| - hit/miss target<br>- Shape                                                                                                         | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude | Longitude  |
|--------------------------------------------------------------------------------------------------------------------------------------|---------------|--------------|------------|--------------|--------------|-----------------|----------------|----------|------------|
| Daisy State Com #50:<br>- plan misses target center by 576.35usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)<br>- Point               | 0.00          | 0.00         | 0.00       | 171.00       | -550.40      | 408,255.80      | 557,587.30     | 32.12228 | -104.14732 |
| Daisy State Com #50:<br>- plan hits target center<br>- Point                                                                         | 0.00          | 0.00         | 7,769.00   | -10,284.30   | -425.50      | 397,800.50      | 557,712.20     | 32.09353 | -104.14698 |
| Daisy State Com #50:<br>- plan misses target center by 18.52usft at 18000.00usft MD (7769.14 TVD, -10215.78 N, -426.32 E)<br>- Point | 0.00          | 0.00         | 7,769.10   | -10,234.30   | -426.10      | 397,850.50      | 557,711.60     | 32.09367 | -104.14698 |

## Formations

| Measured Depth (usft) | Vertical Depth (usft) | Name                | Lithology | Dip (°) | Dip Direction (°) |
|-----------------------|-----------------------|---------------------|-----------|---------|-------------------|
| 580.00                | 580.00                | TOS                 |           | 0.00    |                   |
| 2,022.00              | 2,022.00              | BOS (Fletcher)      |           | 0.00    |                   |
| 2,216.00              | 2,216.00              | LMAR (Top Delaware) |           | 0.00    |                   |
| 2,252.00              | 2,252.00              | BLCN                |           | 0.00    |                   |
| 3,069.00              | 3,069.00              | CYCN                |           | 0.00    |                   |
| 4,265.00              | 4,265.00              | BYCN                |           | 0.00    |                   |
| 5,883.46              | 5,883.00              | Bone Sprg (BSGL)    |           |         |                   |
| 6,182.56              | 6,179.00              | U Avalon Sh         |           |         |                   |
| 6,421.65              | 6,415.00              | L Avalon Sh         |           |         |                   |
| 6,757.99              | 6,747.00              | B Avalon Sh         |           |         |                   |
| 6,812.70              | 6,801.00              | FBSG_sand           |           |         |                   |
| 7,387.50              | 7,367.00              | SBSG_sand           |           |         |                   |



## Survey Report



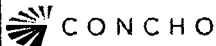
**Company:** COG Operating L L C  
**Project:** Eddy County, NM (NAD 27 NME)  
**Site:** Sec. 24, T 25S. , R 27 E  
**Well:** Daisy State Com #503H  
**Wellbore:** Wellbore #1  
**Design:** Plan #1

**Local Co-ordinate Reference:** Well Daisy State Com #503H  
**TVD Reference:** KB=26' @ 3083.00usft (Scandriil Freedom)  
**MD Reference:** KB=26' @ 3083.00usft (Scandriil Freedom)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 5000.1

### Plan Annotations

| Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Local Coordinates |                 | Comment                          |
|-----------------------------|-----------------------------|-------------------|-----------------|----------------------------------|
|                             |                             | +N/-S<br>(usft)   | +E/-W<br>(usft) |                                  |
| 5600                        | 5600                        | 0                 | 0               | Start Build 2.00                 |
| 6061                        | 6059                        | 23                | -29             | Start 1148.54 hold at 6060.93 MD |
| 7209                        | 7193                        | 140               | -171            | Start DLS 10.00 TFO -109.08      |
| 8140                        | 7789                        | -366              | -453            | Start DLS 4.00 TFO -89.66        |
| 8657                        | 7788                        | -874              | -539            | Start 9411.44 hold at 8657.09 MD |
| 18,069                      | 7769                        | -10,284           | -426            | TD at 18068.52                   |

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_



COG Operating L.L.C.  
Project: Eddy County, NM (NAD 27 NME)  
Site: Sec. 24, T 25S., R 27 E  
Well: Daisy State Com #503H  
Wellbore: Wellbore #1  
Plan: Plan #1 (Daisy State Com #503H/Wellbore #1)  
Scandril Freedom

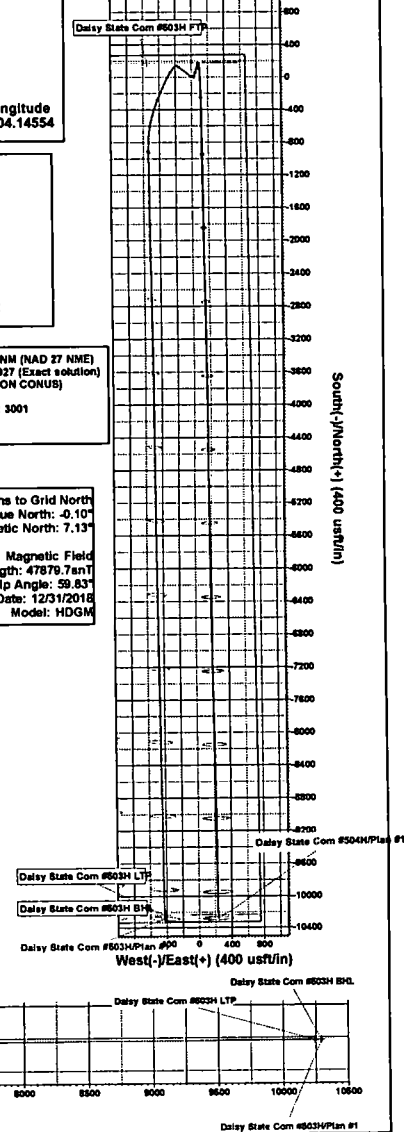
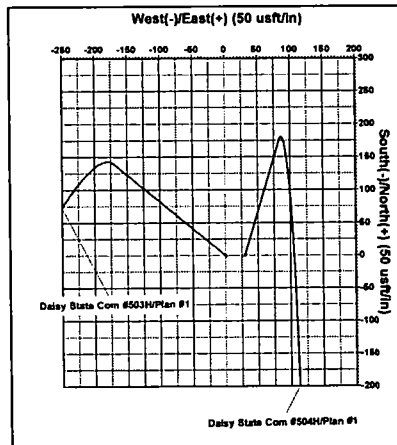
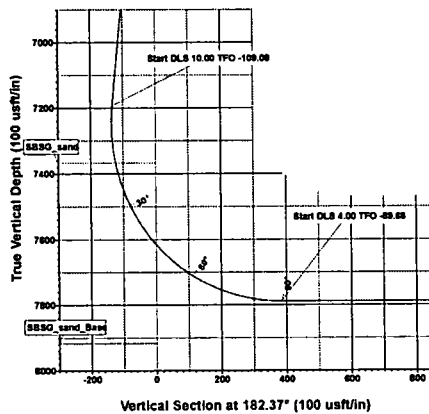
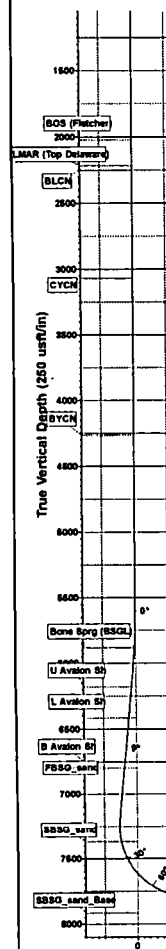
WELL DETAILS: Daisy State Com #503H  
Ground Elevation: 3057.00  
RKB Elevation: KB=28' @ 3083.00u/sft (Scandril Freedom)  
Rig Name: Scandril Freedom  
Northing 408084.80 Easting 558137.70 Latitude 32.12180 Longitude -104.14554

#### Planned Section Details

| Sec | MD       | Inc   | Azi    | TVD     | +N/-S     | +E/-W   | Dleg  | TFace   | Vsect    | Annotation                       |
|-----|----------|-------|--------|---------|-----------|---------|-------|---------|----------|----------------------------------|
| 1   | 0.00     | 0.00  | 0.00   | 0.00    | 0.00      | 0.00    | 0.00  | 0.00    | 0.00     | Start Build 2.00                 |
| 2   | 5600.00  | 0.00  | 0.00   | 5600.00 | 0.00      | 0.00    | 0.00  | 0.00    | 0.00     | Start 1148.54 hold at 6060.93 MD |
| 3   | 6060.93  | 9.22  | 309.31 | 6058.95 | 23.44     | -28.63  | 2.00  | 309.31  | -22.24   | Start DLS 10.00 TFO -109.08      |
| 4   | 7209.47  | 9.22  | 309.31 | 7192.85 | 140.00    | -171.00 | 0.00  | 0.00    | -132.81  | Start DLS 4.00 TFO -89.66        |
| 5   | 8139.83  | 90.00 | 200.00 | 7789.00 | -366.41   | -452.52 | 10.00 | -109.08 | 384.80   | Start 9411.44 hold at 8857.09 MD |
| 6   | 8857.09  | 90.12 | 179.31 | 7788.46 | -873.57   | -538.80 | 4.00  | -89.66  | 895.09   | TD at 18068.52                   |
| 7   | 18068.52 | 90.12 | 179.31 | 7769.00 | -10284.30 | -425.50 | 0.00  | 0.00    | 10293.10 |                                  |

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  
Local North: Grid

Magnitudes to Grid North  
True North: -0.10°  
Magnetic North: 7.13°  
Magnetic Field  
Strength: 47879.7aT  
Dip Angle: 59.83°  
Date: 12/31/2018  
Model: HDGM



Vertical Section at 182.37° (250 u/sft/in)