



January 23, 2015

1542877

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

Attn: Kanicia Castillo

RE: Pinto 36 State 9H

Please find enclosed a copy of the survey from 0' to 2000' ran on the above referenced well.

Sincerely,

Keith Havelka  
Operations

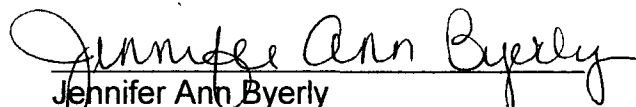
NM OIL CONSERVATION  
ARTESIA DISTRICT

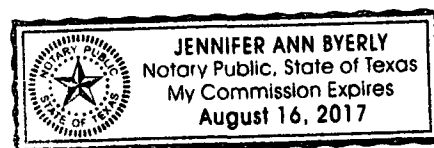
MAR 30 2015

STATE OF TEXAS §  
COUNTY OF NUECES §

RECEIVED

This instrument was acknowledged before me on the 23 day of Jan.,  
A.D., 2015, by Keith Havelka.

  
Jennifer Ann Byerly  
Notary Public, State of Texas





Company: Concho  
Lease/Well: Pinto 36 State/9H  
Location: Sec31 T18S R25E

Rig Name: Silver Oak 3  
State/County: New Mexico/Eddy  
Latitude: 32.70, Longitude: -104.43

GRID North is 0.05 Degrees West of True North

VS-Azi: 0.00 Degrees



Depth Reference : RKB = 18 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut  
Minimum Curvature Method  
Report Date/Time: 1/23/2015 / 12:21

VES Survey International  
West Texas  
(432) 563-5444  
Surveyor: Noe Garza  
Pinto 36 State 9H / API 30-015-42877

NM OIL CONSERVATION

ARTESIA DISTRICT

MAR 30 2015

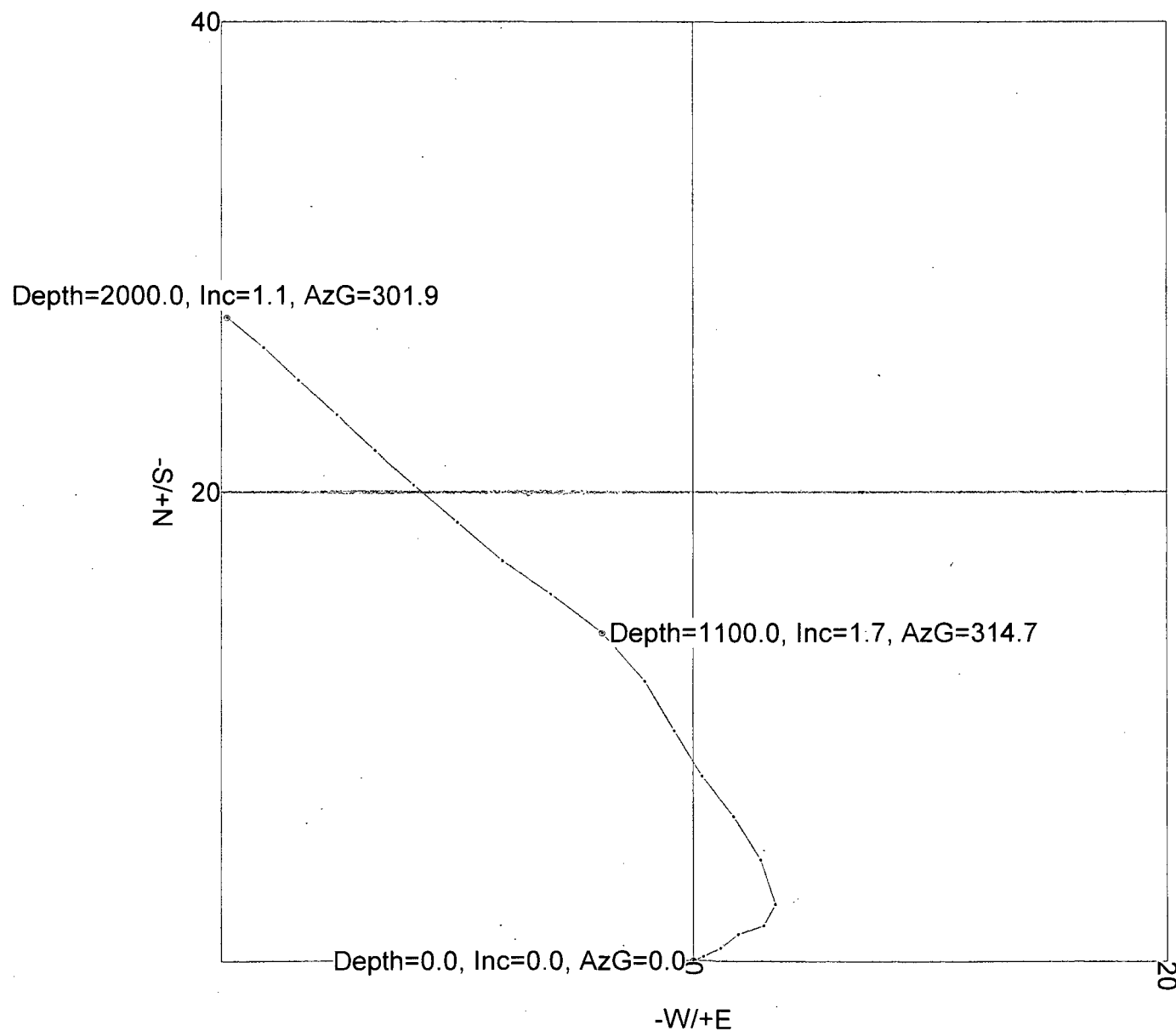
RECEIVED

| Measured<br>Depth<br>FT | Incl<br>Angle<br>Deg | Drift<br>Direction<br>Deg | TVD<br>FT | +N/-S<br>FT | +E/-W<br>FT | Vertical<br>Section<br>FT | Closure<br>Distance<br>FT | Closure<br>Direction<br>Deg | Dogleg<br>Severity<br>Deg/100 |
|-------------------------|----------------------|---------------------------|-----------|-------------|-------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 0.00                    | 0.00                 | 0.00                      | 0.00      | 0.00        | 0.00        | 0.00                      | 0.00                      | 0.00                        | ****                          |
| 100.00                  | 0.52                 | 68.02                     | 100.00    | 0.17        | 0.42        | 0.17                      | 0.45                      | 68.02                       | 0.52                          |
| 200.00                  | 0.42                 | 56.65                     | 200.00    | 0.54        | 1.15        | 0.54                      | 1.27                      | 64.73                       | 0.13                          |
| 300.00                  | 0.68                 | 49.32                     | 299.99    | 1.13        | 1.91        | 1.13                      | 2.22                      | 59.31                       | 0.27                          |
| 400.00                  | 0.73                 | 90.62                     | 399.98    | 1.51        | 2.99        | 1.51                      | 3.35                      | 63.18                       | 0.50                          |
| 500.00                  | 1.06                 | 351.36                    | 499.98    | 2.42        | 3.48        | 2.42                      | 4.24                      | 55.20                       | 1.38                          |
| 600.00                  | 1.25                 | 333.75                    | 599.96    | 4.31        | 2.86        | 4.31                      | 5.18                      | 33.57                       | 0.40                          |
| 700.00                  | 1.26                 | 322.54                    | 699.93    | 6.16        | 1.71        | 6.16                      | 6.40                      | 15.53                       | 0.25                          |
| 800.00                  | 1.24                 | 321.63                    | 799.91    | 7.88        | 0.37        | 7.88                      | 7.89                      | 2.70                        | 0.03                          |
| 900.00                  | 1.38                 | 335.98                    | 899.88    | 9.83        | -0.79       | 9.83                      | 9.86                      | 355.41                      | 0.35                          |
| 1000.00                 | 1.45                 | 323.64                    | 999.85    | 11.95       | -2.03       | 11.95                     | 12.12                     | 350.36                      | 0.31                          |
| 1100.00                 | 1.70                 | 314.69                    | 1099.81   | 14.01       | -3.83       | 14.01                     | 14.53                     | 344.69                      | 0.35                          |
| 1200.00                 | 1.45                 | 299.04                    | 1199.78   | 15.67       | -6.00       | 15.67                     | 16.78                     | 339.06                      | 0.49                          |
| 1300.00                 | 1.39                 | 310.34                    | 1299.75   | 17.07       | -8.03       | 17.07                     | 18.86                     | 334.81                      | 0.29                          |
| 1400.00                 | 1.49                 | 311.21                    | 1399.71   | 18.71       | -9.93       | 18.71                     | 21.18                     | 332.04                      | 0.10                          |
| 1500.00                 | 1.32                 | 310.42                    | 1499.68   | 20.31       | -11.78      | 20.31                     | 23.48                     | 329.88                      | 0.17                          |
| 1600.00                 | 1.22                 | 313.02                    | 1599.66   | 21.78       | -13.44      | 21.78                     | 25.59                     | 328.33                      | 0.11                          |
| 1700.00                 | 1.33                 | 312.95                    | 1699.64   | 23.30       | -15.06      | 23.30                     | 27.75                     | 327.12                      | 0.11                          |
| 1800.00                 | 1.18                 | 309.84                    | 1799.61   | 24.75       | -16.71      | 24.75                     | 29.86                     | 325.98                      | 0.16                          |

| Measured<br>Depth<br>FT | Incl<br>Angle<br>Deg | Drift<br>Direction<br>Deg | TVD<br>FT | +N/-S<br>FT | +E/-W<br>FT | Vertical<br>Section<br>FT | Closure<br>Distance<br>FT | Closure<br>Direction<br>Deg | Dogleg<br>Severity<br>Deg/100 |
|-------------------------|----------------------|---------------------------|-----------|-------------|-------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 1900.00                 | 1.16                 | 316.59                    | 1899.59   | 26.15       | -18.20      | 26.15                     | 31.86                     | 325.17                      | 0.14                          |
| 2000.00                 | 1.15                 | 301.85                    | 1999.57   | 27.42       | -19.74      | 27.42                     | 33.79                     | 324.24                      | 0.30                          |



VES Survey International  
West Texas  
(432) 563-5444  
Surveyor: Noe Garza  
Pinto 36 State 9H / API 30-015-42877



VES Survey Date: 1/19/2015



NM OIL CONSERVATION  
ARTESIA DISTRICT

MAR 30 2015

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## COG Operating LLC

Eddy County, NM (NAD27 NME)

Pinto 36 State Com

#9H

WB1 / Job #1512741

Design: Surveys (Silver Oak 3)

## Standard Survey Report

28 January, 2015





## Survey Report



|           |                            |                              |                                 |
|-----------|----------------------------|------------------------------|---------------------------------|
| Company:  | COG Operating LLC          | Local Co-ordinate Reference: | Well #9H                        |
| Project:  | Eddy County NM (NAD27/NME) | TVD Reference:               | KB @ 3473'00usft (Silver Oak 3) |
| Site:     | Pinto 36 State Com         | MD Reference:                | KB @ 3473'00usft (Silver Oak 3) |
| Well:     | #9H                        | North Reference:             | Grid                            |
| Wellbore: | WB1 / Job #1512741         | Survey Calculation Method:   | Minimum Curvature               |
| Design:   | Surveys (Silver Oak 3)     | Database:                    | Compass 5000 GCR                |

|                                     |                                      |               |                |
|-------------------------------------|--------------------------------------|---------------|----------------|
| Project: Eddy County NM (NAD27/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                  |           | Pinto 36 State Com |                 |                   |                     |
| Site Position:        |           | Northing:          | 617,373.90 usft | Latitude:         | 32° 41' 49.99854 N  |
| From:                 | Map       | Easting:           | 470,225.00 usft | Longitude:        | 104° 25' 48.44242 W |
| Position Uncertainty: | 0.00 usft | Slot Radius:       | 13-3/16 "       | Grid Convergence: | -0.05 °             |

|                      |       |           |                     |                 |               |                     |
|----------------------|-------|-----------|---------------------|-----------------|---------------|---------------------|
| Well                 |       | #9H       |                     |                 |               |                     |
| Well Position        | +N/-S | 0.00 usft | Northing:           | 617,652.00 usft | Latitude:     | 32° 41' 52.75521 N  |
|                      | +E/-W | 0.00 usft | Easting:            | 470,749.60 usft | Longitude:    | 104° 25' 42.30621 W |
| Position Uncertainty |       | 0.00 usft | Wellhead Elevation: | usft            | Ground Level: | 3,455.00 usft       |

|           |  |            |  |             |  |                    |  |                  |  |                        |  |
|-----------|--|------------|--|-------------|--|--------------------|--|------------------|--|------------------------|--|
| Wellbore  |  |            |  |             |  | WB1 / Job #1512741 |  |                  |  |                        |  |
| Magnetics |  | Model Name |  | Sample Date |  | Declination<br>(°) |  | Dip Angle<br>(°) |  | Field Strength<br>(nT) |  |
|           |  | IGRF2015   |  | 1/20/2015   |  | 7.64               |  | 60.39            |  | 48,374                 |  |

|                                |                            |                 |                 |                    |
|--------------------------------|----------------------------|-----------------|-----------------|--------------------|
| Design: Surveys (Silver Oak 3) |                            |                 |                 |                    |
| Audit Notes:                   |                            |                 |                 |                    |
| Version:                       | 1.0                        | Phase:          | ACTUAL          | Tie On Depth: 0.00 |
| Vertical Section:              | Depth From (TVD)<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Direction<br>(°)   |
|                                | 0.00                       | 0.00            | 0.00            | 270.27             |

| Survey Program |              | Date                                 | 1/28/2015    |                                      |  |
|----------------|--------------|--------------------------------------|--------------|--------------------------------------|--|
| From<br>(usft) | To<br>(usft) | Survey (Wellbore)                    | Tool Name    | Description                          |  |
| 100.00         | 2,000.00     | VES Gyro Survey (WB1 / Job #1512741) | NS-GYRO-MS   | North sensing gyrocompassing m/s     |  |
| 2,000.00       | 7,682.00     | Phoenix MWD Survey (WB1 / Job #15127 | PHX+MWD+IGRF | PHX+MWD+IGRF v3:standard declination |  |

|                       |                 |             |                       |              |              |                         |                         |                        |                       |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 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                | 0.52            | 68.02       | 100.00                | 0.17         | 0.42         | -0.42                   | 0.52                    | 0.52                   | 0.00                  |
| 200.00                | 0.42            | 56.65       | 200.00                | 0.54         | 1.15         | -1.15                   | 0.14                    | -0.10                  | -11.37                |
| 300.00                | 0.68            | 49.32       | 299.99                | 1.13         | 1.90         | -1.90                   | 0.27                    | 0.26                   | -7.33                 |
| 400.00                | 0.73            | 90.62       | 399.98                | 1.51         | 2.99         | -2.98                   | 0.50                    | 0.05                   | 41.30                 |
| 500.00                | 1.06            | 351.36      | 499.98                | 2.42         | 3.49         | -3.48                   | 1.38                    | 0.33                   | -99.26                |
| 600.00                | 1.25            | 333.75      | 599.96                | 4.31         | 2.87         | -2.85                   | 0.40                    | 0.19                   | -17.61                |
| 700.00                | 1.26            | 322.54      | 699.93                | 6.16         | 1.72         | -1.69                   | 0.25                    | 0.01                   | -11.21                |
| 800.00                | 1.24            | 321.63      | 799.91                | 7.88         | 0.38         | -0.34                   | 0.03                    | -0.02                  | -0.91                 |
| 900.00                | 1.38            | 335.98      | 899.88                | 9.83         | -0.79        | 0.83                    | 0.36                    | 0.14                   | 14.35                 |



## Survey Report



|           |                             |                              |                                 |
|-----------|-----------------------------|------------------------------|---------------------------------|
| Company:  | COG Operating LLC           | Local Co-ordinate Reference: | Well #9H                        |
| Project:  | Eddy County, NM (NAD27 NME) | TVD Reference:               | KB @ 3473.00usft (Silver Oak 3) |
| Site:     | Pinto 36 State Com          | MD Reference:                | KB @ 3473.00usft (Silver Oak 3) |
| Well:     | #9H                         | North Reference:             | Grid                            |
| Wellbore: | WB1 / Job #1512741          | Survey Calculation Method:   | Minimum Curvature               |
| Design:   | Surveys (Silver Oak 3)      | Database:                    | Compass 5000 GCR                |

| 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                  | 1.45            | 323.64      | 999.85                | 11.95        | -2.03        | 2.08                    | 0.31                    | 0.07                   | -12.34                |
| 1,100.00                  | 1.70            | 314.69      | 1,099.81              | 14.01        | -3.83        | 3.90                    | 0.35                    | 0.25                   | -8.95                 |
| 1,200.00                  | 1.45            | 299.04      | 1,199.78              | 15.67        | -5.99        | 6.07                    | 0.50                    | -0.25                  | -15.65                |
| 1,300.00                  | 1.39            | 310.34      | 1,299.75              | 17.07        | -8.02        | 8.10                    | 0.29                    | -0.06                  | 11.30                 |
| 1,400.00                  | 1.49            | 311.21      | 1,399.71              | 18.71        | -9.92        | 10.01                   | 0.10                    | 0.10                   | 0.87                  |
| 1,500.00                  | 1.32            | 310.42      | 1,499.68              | 20.31        | -11.78       | 11.88                   | 0.17                    | -0.17                  | -0.79                 |
| 1,600.00                  | 1.22            | 313.02      | 1,599.66              | 21.79        | -13.43       | 13.54                   | 0.12                    | -0.10                  | 2.60                  |
| 1,700.00                  | 1.33            | 312.95      | 1,699.64              | 23.30        | -15.06       | 15.17                   | 0.11                    | 0.11                   | -0.07                 |
| 1,800.00                  | 1.18            | 309.84      | 1,799.61              | 24.75        | -16.70       | 16.82                   | 0.16                    | -0.15                  | -3.11                 |
| 1,900.00                  | 1.16            | 316.59      | 1,899.59              | 26.15        | -18.19       | 18.31                   | 0.14                    | -0.02                  | 6.75                  |
| 2,000.00                  | 1.15            | 301.85      | 1,999.57              | 27.41        | -19.74       | 19.87                   | 0.30                    | -0.01                  | -14.74                |
| Tie-on to VES Gyro Survey |                 |             |                       |              |              |                         |                         |                        |                       |
| 2,131.00                  | 1.10            | 298.10      | 2,130.55              | 28.70        | -21.96       | 22.10                   | 0.07                    | -0.04                  | -2.86                 |
| First Phoenix MWD Survey  |                 |             |                       |              |              |                         |                         |                        |                       |
| 2,163.00                  | 1.80            | 286.50      | 2,162.53              | 28.99        | -22.72       | 22.85                   | 2.36                    | 2.19                   | -36.25                |
| 2,194.00                  | 6.70            | 294.20      | 2,193.44              | 29.87        | -24.83       | 24.97                   | 15.88                   | 15.81                  | 24.84                 |
| 2,226.00                  | 11.90           | 300.40      | 2,225.01              | 32.30        | -29.38       | 29.54                   | 16.53                   | 16.25                  | 19.38                 |
| 2,257.00                  | 17.10           | 295.40      | 2,255.01              | 35.88        | -36.26       | 36.43                   | 17.24                   | 16.77                  | -16.13                |
| 2,289.00                  | 20.80           | 295.30      | 2,285.27              | 40.33        | -45.65       | 45.84                   | 11.56                   | 11.56                  | -0.31                 |
| 2,320.00                  | 23.70           | 290.30      | 2,313.96              | 44.84        | -56.48       | 56.69                   | 11.16                   | 9.35                   | -16.13                |
| 2,351.00                  | 23.80           | 284.70      | 2,342.34              | 48.59        | -68.37       | 68.60                   | 7.28                    | 0.32                   | -18.06                |
| 2,383.00                  | 25.40           | 278.70      | 2,371.44              | 51.27        | -81.40       | 81.64                   | 9.26                    | 5.00                   | -18.75                |
| 2,415.00                  | 27.20           | 272.50      | 2,400.13              | 52.62        | -95.50       | 95.74                   | 10.26                   | 5.63                   | -19.38                |
| 2,445.00                  | 29.50           | 264.20      | 2,426.54              | 52.18        | -109.70      | 109.95                  | 15.19                   | 7.67                   | -27.67                |
| 2,477.00                  | 31.20           | 260.90      | 2,454.16              | 50.07        | -125.73      | 125.96                  | 7.44                    | 5.31                   | -10.31                |
| 2,509.00                  | 32.90           | 262.70      | 2,481.28              | 47.65        | -142.53      | 142.76                  | 6.09                    | 5.31                   | 5.63                  |
| 2,540.00                  | 34.40           | 262.80      | 2,507.09              | 45.49        | -159.57      | 159.79                  | 4.84                    | 4.84                   | 0.32                  |
| 2,572.00                  | 34.70           | 260.40      | 2,533.44              | 42.83        | -177.52      | 177.72                  | 4.36                    | 0.94                   | -7.50                 |
| 2,604.00                  | 36.10           | 257.80      | 2,559.53              | 39.32        | -195.72      | 195.90                  | 6.43                    | 4.38                   | -8.13                 |
| 2,635.00                  | 37.20           | 256.10      | 2,584.40              | 35.14        | -213.75      | 213.91                  | 4.83                    | 3.55                   | -5.48                 |
| 2,667.00                  | 40.00           | 255.50      | 2,609.41              | 30.24        | -233.10      | 233.24                  | 8.83                    | 8.75                   | -1.88                 |
| 2,698.00                  | 42.90           | 255.50      | 2,632.64              | 25.10        | -252.96      | 253.08                  | 9.35                    | 9.35                   | 0.00                  |
| 2,730.00                  | 45.50           | 254.50      | 2,655.58              | 19.33        | -274.51      | 274.60                  | 8.41                    | 8.13                   | -3.13                 |
| 2,761.00                  | 48.60           | 254.30      | 2,676.70              | 13.22        | -296.36      | 296.42                  | 10.01                   | 10.00                  | -0.65                 |
| 2,793.00                  | 51.10           | 252.60      | 2,697.33              | 6.25         | -319.80      | 319.83                  | 8.80                    | 7.81                   | -5.31                 |
| 2,825.00                  | 55.00           | 251.70      | 2,716.56              | -1.59        | -344.14      | 344.12                  | 12.39                   | 12.19                  | -2.81                 |
| 2,856.00                  | 59.60           | 251.20      | 2,733.31              | -9.89        | -368.86      | 368.81                  | 14.90                   | 14.84                  | -1.61                 |
| 2,888.00                  | 63.90           | 250.70      | 2,748.45              | -19.09       | -395.50      | 395.40                  | 13.51                   | 13.44                  | -1.56                 |
| 2,918.00                  | 68.30           | 251.30      | 2,760.60              | -28.02       | -421.42      | 421.29                  | 14.78                   | 14.67                  | 2.00                  |
| 2,950.00                  | 73.20           | 252.00      | 2,771.15              | -37.52       | -450.09      | 449.91                  | 15.45                   | 15.31                  | 2.19                  |
| 2,982.00                  | 78.60           | 254.10      | 2,778.94              | -46.56       | -479.77      | 479.54                  | 18.03                   | 16.88                  | 6.56                  |
| 3,013.00                  | 83.90           | 256.70      | 2,783.66              | -54.27       | -509.41      | 509.14                  | 19.00                   | 17.10                  | 8.39                  |
| 3,034.00                  | 87.30           | 259.00      | 2,785.27              | -58.68       | -529.87      | 529.59                  | 19.53                   | 16.19                  | 10.95                 |



## Survey Report



|           |                            |                              |                                 |
|-----------|----------------------------|------------------------------|---------------------------------|
| Company:  | COG Operating LLC          | Local Co-ordinate Reference: | Well #9H                        |
| Project:  | Eddy County NM (NAD27 NME) | TVD Reference:               | KB @ 3473.00usft (Silver Oak 3) |
| Site:     | Pinto 36 State Com         | MD Reference:                | KB @ 3473.00usft (Silver Oak 3) |
| Well:     | #9H                        | North Reference:             | Grid                            |
| Wellbore: | WB1 / Job #1512741         | Survey Calculation Method:   | Minimum Curvature               |
| Design:   | Surveys (Silver Oak 3)     | Database:                    | Compass 5000 GCR                |

| 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) |
| 3,065.00              | 89.20           | 263.80      | 2,786.22              | -63.31       | -560.50      | 560.19                  | 16.65                   | 6.13                   | 15.48                 |
| 3,096.00              | 89.50           | 265.30      | 2,786.57              | -66.25       | -591.35      | 591.04                  | 4.93                    | 0.97                   | 4.84                  |
| 3,128.00              | 89.40           | 267.10      | 2,786.87              | -68.37       | -623.28      | 622.95                  | 5.63                    | -0.31                  | 5.63                  |
| 3,157.00              | 90.30           | 268.90      | 2,786.95              | -69.39       | -652.26      | 651.93                  | 6.94                    | 3.10                   | 6.21                  |
| 3,189.00              | 91.50           | 270.80      | 2,786.45              | -69.47       | -684.26      | 683.92                  | 7.02                    | 3.75                   | 5.94                  |
| 3,220.00              | 92.60           | 272.40      | 2,785.34              | -68.61       | -715.22      | 714.89                  | 6.26                    | 3.55                   | 5.16                  |
| 3,251.00              | 93.00           | 272.80      | 2,783.82              | -67.20       | -746.15      | 745.83                  | 1.82                    | 1.29                   | 1.29                  |
| 3,345.00              | 93.20           | 272.40      | 2,778.74              | -62.94       | -839.92      | 839.61                  | 0.48                    | 0.21                   | -0.43                 |
| 3,441.00              | 93.20           | 271.70      | 2,773.38              | -59.51       | -935.71      | 935.42                  | 0.73                    | 0.00                   | -0.73                 |
| 3,536.00              | 92.10           | 270.80      | 2,768.99              | -57.44       | -1,030.58    | 1,030.30                | 1.50                    | -1.16                  | -0.95                 |
| 3,629.00              | 92.40           | 270.80      | 2,765.34              | -56.15       | -1,123.50    | 1,123.22                | 0.32                    | 0.32                   | 0.00                  |
| 3,724.00              | 92.60           | 270.30      | 2,761.19              | -55.24       | -1,218.41    | 1,218.13                | 0.57                    | 0.21                   | -0.53                 |
| 3,819.00              | 92.80           | 269.70      | 2,756.72              | -55.24       | -1,313.30    | 1,313.02                | 0.67                    | 0.21                   | -0.63                 |
| 3,913.00              | 93.40           | 270.00      | 2,751.64              | -55.48       | -1,407.16    | 1,406.88                | 0.71                    | 0.64                   | 0.32                  |
| 4,007.00              | 92.20           | 270.10      | 2,747.04              | -55.40       | -1,501.05    | 1,500.77                | 1.28                    | -1.28                  | 0.11                  |
| 4,102.00              | 92.30           | 271.80      | 2,743.31              | -53.83       | -1,595.96    | 1,595.69                | 1.79                    | 0.11                   | 1.79                  |
| 4,196.00              | 93.10           | 271.90      | 2,738.89              | -50.80       | -1,689.80    | 1,689.54                | 0.86                    | 0.85                   | 0.11                  |
| 4,291.00              | 91.70           | 272.30      | 2,734.91              | -47.32       | -1,784.65    | 1,784.41                | 1.53                    | -1.47                  | 0.42                  |
| 4,383.00              | 91.70           | 272.10      | 2,732.18              | -43.79       | -1,876.54    | 1,876.32                | 0.22                    | 0.00                   | -0.22                 |
| 4,478.00              | 92.10           | 271.70      | 2,729.03              | -40.64       | -1,971.44    | 1,971.23                | 0.60                    | 0.42                   | -0.42                 |
| 4,573.00              | 92.60           | 271.10      | 2,725.13              | -38.32       | -2,066.33    | 2,066.13                | 0.82                    | 0.53                   | -0.63                 |
| 4,668.00              | 91.20           | 271.50      | 2,721.98              | -36.17       | -2,161.25    | 2,161.06                | 1.53                    | -1.47                  | 0.42                  |
| 4,762.00              | 91.30           | 270.40      | 2,719.93              | -34.61       | -2,255.22    | 2,255.03                | 1.17                    | 0.11                   | -1.17                 |
| 4,858.00              | 90.80           | 270.50      | 2,718.17              | -33.85       | -2,351.20    | 2,351.01                | 0.53                    | -0.52                  | 0.10                  |
| 4,953.00              | 91.70           | 271.80      | 2,716.10              | -31.95       | -2,446.15    | 2,445.97                | 1.66                    | 0.95                   | 1.37                  |
| 5,048.00              | 92.00           | 271.00      | 2,713.03              | -29.63       | -2,541.07    | 2,540.90                | 0.90                    | 0.32                   | -0.84                 |
| 5,143.00              | 91.70           | 272.50      | 2,709.97              | -26.73       | -2,635.98    | 2,635.82                | 1.61                    | -0.32                  | 1.58                  |
| 5,238.00              | 92.30           | 272.10      | 2,706.65              | -22.92       | -2,730.84    | 2,730.70                | 0.76                    | 0.63                   | -0.42                 |
| 5,333.00              | 90.80           | 271.50      | 2,704.08              | -19.94       | -2,825.76    | 2,825.63                | 1.70                    | -1.58                  | -0.63                 |
| 5,428.00              | 91.30           | 270.90      | 2,702.34              | -17.95       | -2,920.72    | 2,920.60                | 0.82                    | 0.53                   | -0.63                 |
| 5,521.00              | 91.80           | 270.00      | 2,699.83              | -17.22       | -3,013.68    | 3,013.57                | 1.11                    | 0.54                   | -0.97                 |
| 5,615.00              | 92.80           | 270.90      | 2,696.05              | -16.48       | -3,107.60    | 3,107.49                | 1.43                    | 1.06                   | 0.96                  |
| 5,710.00              | 92.60           | 272.90      | 2,691.58              | -13.33       | -3,202.44    | 3,202.34                | 2.11                    | -0.21                  | 2.11                  |
| 5,805.00              | 91.30           | 273.80      | 2,688.35              | -7.78        | -3,297.22    | 3,297.14                | 1.66                    | -1.37                  | 0.95                  |
| 5,900.00              | 91.20           | 273.30      | 2,686.27              | -1.90        | -3,392.01    | 3,391.96                | 0.54                    | -0.11                  | -0.53                 |
| 5,995.00              | 91.90           | 273.40      | 2,683.70              | 3.65         | -3,486.81    | 3,486.79                | 0.74                    | 0.74                   | 0.11                  |
| 6,089.00              | 92.00           | 272.90      | 2,680.50              | 8.81         | -3,580.62    | 3,580.62                | 0.54                    | 0.11                   | -0.53                 |
| 6,184.00              | 91.10           | 271.50      | 2,677.94              | 12.45        | -3,675.51    | 3,675.53                | 1.75                    | -0.95                  | -1.47                 |
| 6,279.00              | 90.90           | 271.10      | 2,676.28              | 14.61        | -3,770.47    | 3,770.50                | 0.47                    | -0.21                  | -0.42                 |
| 6,375.00              | 91.40           | 269.40      | 2,674.35              | 15.03        | -3,866.45    | 3,866.47                | 1.85                    | 0.52                   | -1.77                 |
| 6,470.00              | 91.40           | 268.70      | 2,672.03              | 13.45        | -3,961.40    | 3,961.42                | 0.74                    | 0.00                   | -0.74                 |
| 6,565.00              | 91.20           | 267.90      | 2,669.87              | 10.64        | -4,056.34    | 4,056.34                | 0.87                    | -0.21                  | -0.84                 |
| 6,659.00              | 93.10           | 269.10      | 2,666.35              | 8.18         | -4,150.23    | 4,150.22                | 2.39                    | 2.02                   | 1.28                  |
| 6,754.00              | 93.10           | 268.90      | 2,661.21              | 6.52         | -4,245.08    | 4,245.06                | 0.21                    | 0.00                   | -0.21                 |



## Survey Report



|           |                            |                              |                                 |
|-----------|----------------------------|------------------------------|---------------------------------|
| Company:  | COG Operating LLC          | Local Co-ordinate Reference: | Well: #9H                       |
| Project:  | Eddy County NM (NAD27/NME) | TVD Reference:               | KB @ 3473.00usft (Silver Oak 3) |
| Site:     | Pinto 36 State Com         | MD Reference:                | KB @ 3473.00usft (Silver Oak 3) |
| Well:     | #9H                        | North Reference:             | Grid                            |
| Wellbore: | WB1 / Job #1512741         | Survey Calculation Method:   | Minimum Curvature               |
| Design:   | Surveys (Silver Oak 3)     | Database:                    | Compass 5000 GCR                |

## 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) |
|-------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 6,849.00                | 92.60           | 271.30      | 2,656.49              | 6.69         | -4,339.95    | 4,339.94                | 2.58                    | -0.53                  | 2.53                  |
| 6,944.00                | 92.60           | 271.00      | 2,652.18              | 8.59         | -4,434.84    | 4,434.83                | 0.32                    | 0.00                   | -0.32                 |
| 7,038.00                | 92.70           | 270.90      | 2,647.83              | 10.15        | -4,528.72    | 4,528.72                | 0.15                    | 0.11                   | -0.11                 |
| 7,133.00                | 92.90           | 270.50      | 2,643.19              | 11.31        | -4,623.60    | 4,623.60                | 0.47                    | 0.21                   | -0.42                 |
| 7,228.00                | 92.80           | 271.80      | 2,638.47              | 13.21        | -4,718.46    | 4,718.47                | 1.37                    | -0.11                  | 1.37                  |
| 7,323.00                | 90.80           | 272.50      | 2,635.48              | 16.77        | -4,813.34    | 4,813.37                | 2.23                    | -2.11                  | 0.74                  |
| 7,418.00                | 91.00           | 272.30      | 2,633.99              | 20.75        | -4,908.25    | 4,908.29                | 0.30                    | 0.21                   | -0.21                 |
| 7,513.00                | 91.30           | 271.90      | 2,632.08              | 24.23        | -5,003.17    | 5,003.23                | 0.53                    | 0.32                   | -0.42                 |
| 7,608.00                | 91.30           | 271.40      | 2,629.93              | 26.97        | -5,098.10    | 5,098.17                | 0.53                    | 0.00                   | -0.53                 |
| Last Phoenix MWD Survey |                 |             |                       |              |              |                         |                         |                        |                       |
| 7,682.00                | 91.30           | 271.40      | 2,628.25              | 28.77        | -5,172.06    | 5,172.14                | 0.00                    | 0.00                   | 0.00                  |
| Projection to Bit       |                 |             |                       |              |              |                         |                         |                        |                       |

## Design Annotations

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |              | Comment                   |
|-----------------------|-----------------------|-------------------|--------------|---------------------------|
|                       |                       | +N/-S (usft)      | +E/-W (usft) |                           |
| 2,000.00              | 1,999.57              | 27.41             | -19.74       | Tie-on to VES Gyro Survey |
| 2,131.00              | 2,130.55              | 28.70             | -21.96       | First Phoenix MWD Survey  |
| 7,608.00              | 2,629.93              | 26.97             | -5,098.10    | Last Phoenix MWD Survey   |
| 7,682.00              | 2,628.25              | 28.77             | -5,172.06    | Projection to Bit         |

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