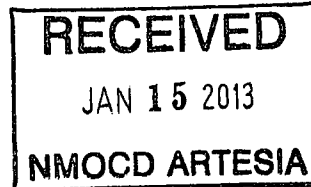


30-015-30744

## COG OPERATING

Red Lake  
Eddy County, NM  
Moncrief State #2  
VH - Job #32K10121343



Survey: Gyro

## SDI Standard Survey Report

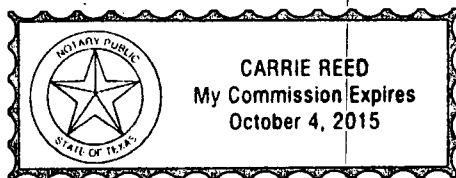
This survey is correct to the best of my knowledge and is supported by actual field data.

Richard

Notarized this date 5th of November, 2012.

Carrie Reed

Notary Signature  
County of Midland  
State of Texas



Scientific Drilling

## Scientific Drilling International, Inc.

SDI Standard Survey Report



|                  |                       |                                     |                                      |
|------------------|-----------------------|-------------------------------------|--------------------------------------|
| <b>Company:</b>  | COG OPERATING         | <b>Local Co-ordinate Reference:</b> | Well Moncrief State #2               |
| <b>Project:</b>  | Red Lake              | <b>TVD Reference:</b>               | WELL @ 0.00usft (Original Well Elev) |
| <b>Site:</b>     | Eddy County, NM       | <b>MD Reference:</b>                | WELL @ 0.00usft (Original Well Elev) |
| <b>Well:</b>     | Moncrief State #2     | <b>North Reference:</b>             | Grid                                 |
| <b>Wellbore:</b> | VH - Job #32K10121343 | <b>Survey Calculation Method:</b>   | Minimum Curvature                    |
| <b>Design:</b>   | VH - Job #32K10121343 | <b>Database:</b>                    | EDM-Regulatory                       |

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

|                              |                 |                          |                  |
|------------------------------|-----------------|--------------------------|------------------|
| <b>Site</b>                  | Eddy County, NM |                          |                  |
| <b>Site Position:</b>        |                 | <b>Northing:</b>         | 662,078.62 usft  |
| <b>From:</b>                 | Lat/Long        | <b>Easting:</b>          | 557,856.84 usft  |
| <b>Position Uncertainty:</b> | 0.00 usft       | <b>Slot Radius:</b>      | 13-3/16"         |
|                              |                 | <b>Latitude:</b>         | 32° 49' 12.000 N |
|                              |                 | <b>Longitude:</b>        | 104° 8' 42.000 W |
|                              |                 | <b>Grid Convergence:</b> | 0.10 °           |

|                             |                             |                            |                                  |
|-----------------------------|-----------------------------|----------------------------|----------------------------------|
| <b>Well</b>                 | Moncrief State #2, Vertical |                            |                                  |
| <b>Well Position</b>        | +N/-S                       | 0.00 usft                  | <b>Northing:</b> 661,711.06 usft |
|                             | +E/-W                       | 0.00 usft                  | <b>Easting:</b> 555,707.03 usft  |
| <b>Position Uncertainty</b> | 0.00 usft                   | <b>Wellhead Elevation:</b> | usft                             |
|                             |                             | <b>Latitude:</b>           | 32° 49' 8.400 N                  |
|                             |                             | <b>Longitude:</b>          | 104° 9' 7.200 W                  |
|                             |                             | <b>Ground Level:</b>       | 0.00 usft                        |

|           |                       |             |                    |                  |                        |
|-----------|-----------------------|-------------|--------------------|------------------|------------------------|
| Wellbore  | VH - Job #32K10121343 |             |                    |                  |                        |
| Magnetics | Model Name            | Sample Date | Declination<br>(°) | Dip Angle<br>(°) | Field Strength<br>(nT) |
|           | IGRF2010              | 10/30/12    | 7.73               | 60.60            | 48,798                 |

|                   |                            |                       |                 |                    |
|-------------------|----------------------------|-----------------------|-----------------|--------------------|
| Design            |                            | VH - Job #32K10121343 |                 |                    |
| 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            | 232.13             |

|                       |             |                              |                  |                    |
|-----------------------|-------------|------------------------------|------------------|--------------------|
| <b>Survey Program</b> | <b>Date</b> | 11/15/12                     |                  |                    |
| <b>From</b>           | <b>To</b>   | <b>Survey (Wellbore)</b>     | <b>Tool Name</b> | <b>Description</b> |
| (usft)                | (usft)      |                              |                  |                    |
| 100.00                | 5,000.00    | Gyro (VH - Job #32K10121343) | Keeper           | Keeper Gyro        |

|                       |                    |                |                      |                    |                  |                        |                         |      |
|-----------------------|--------------------|----------------|----------------------|--------------------|------------------|------------------------|-------------------------|------|
| <b>Survey</b>         |                    |                |                      |                    |                  |                        |                         |      |
| <b>Measured Depth</b> | <b>Inclination</b> | <b>Azimuth</b> | <b>True Vertical</b> | <b>North/South</b> | <b>East/West</b> | <b>Closure Azimuth</b> | <b>Closure Distance</b> |      |
| (usft)                | (°)                | (°)            | Depth                | (usft)             | (usft)           | (°)                    | (usft)                  |      |
| 0.00                  | 0.00               | 0.00           | 0.00                 | 0.00               | 0.00             | 0.00                   | 0.00                    | 0.00 |
| 100.00                | 0.65               | 24.65          | 100.00               | 0.52               | 0.24             | 24.65                  | 0.57                    |      |
| 200.00                | 0.52               | 18.84          | 199.99               | 1.46               | 0.62             | 22.99                  | 1.59                    |      |
| 300.00                | 0.39               | 12.63          | 299.99               | 2.22               | 0.84             | 20.72                  | 2.38                    |      |
| 400.00                | 0.24               | 337.25         | 399.99               | 2.75               | 0.83             | 16.89                  | 2.87                    |      |
| 500.00                | 0.23               | 317.36         | 499.99               | 3.09               | 0.62             | 11.30                  | 3.15                    |      |
| 600.00                | 0.13               | 276.28         | 599.99               | 3.25               | 0.37             | 6.47                   | 3.27                    |      |
| 700.00                | 0.27               | 252.99         | 699.99               | 3.19               | 0.03             | 0.54                   | 3.19                    |      |
| 800.00                | 0.40               | 225.49         | 799.98               | 2.88               | -0.44            | 351.23                 | 2.91                    |      |
| 900.00                | 0.46               | 236.63         | 899.98               | 2.41               | -1.03            | 336.92                 | 2.62                    |      |
| 1,000.00              | 0.55               | 234.05         | 999.98               | 1.91               | -1.75            | 317.47                 | 2.59                    |      |
| 1,100.00              | 0.58               | 231.65         | 1,099.97             | 1.31               | -2.54            | 297.38                 | 2.86                    |      |

**Scientific Drilling International, Inc.**  
SDI Standard Survey Report



|                  |                       |                                     |                                      |
|------------------|-----------------------|-------------------------------------|--------------------------------------|
| <b>Company:</b>  | COG OPERATING         | <b>Local Co-ordinate Reference:</b> | Well Moncrief State #2               |
| <b>Project:</b>  | Red Lake              | <b>TVD Reference:</b>               | WELL @ 0.00usft (Original Well Elev) |
| <b>Site:</b>     | Eddy County, NM       | <b>MD Reference:</b>                | WELL @ 0.00usft (Original Well Elev) |
| <b>Well:</b>     | Moncrief State #2     | <b>North Reference:</b>             | Grid                                 |
| <b>Wellbore:</b> | VH - Job #32K10121343 | <b>Survey Calculation Method:</b>   | Minimum Curvature                    |
| <b>Design:</b>   | VH - Job #32K10121343 | <b>Database:</b>                    | EDM-Regulatory                       |

| Survey                   |                    |                |                        |                       |                     |                        |                            |
|--------------------------|--------------------|----------------|------------------------|-----------------------|---------------------|------------------------|----------------------------|
| Measured Depth<br>(usft) | Inclination<br>(°) | Azimuth<br>(°) | True Vertical<br>Depth | North/South<br>(usft) | East/West<br>(usft) | Closure Azimuth<br>(°) | Closure Distance<br>(usft) |
| 1,200.00                 | 0.62               | 241.40         | 1,199.97               | 0.74                  | -3.41               | 282.26                 | 3.49                       |
| 1,300.00                 | 0.67               | 230.82         | 1,299.96               | 0.11                  | -4.34               | 271.49                 | 4.34                       |
| 1,400.00                 | 0.75               | 228.52         | 1,399.95               | -0.69                 | -5.28               | 262.56                 | 5.33                       |
| 1,500.00                 | 0.74               | 218.47         | 1,499.95               | -1.63                 | -6.17               | 255.22                 | 6.38                       |
| 1,600.00                 | 0.74               | 222.83         | 1,599.94               | -2.61                 | -7.01               | 249.60                 | 7.48                       |
| 1,700.00                 | 0.86               | 217.48         | 1,699.93               | -3.68                 | -7.91               | 245.06                 | 8.72                       |
| 1,800.00                 | 0.91               | 218.16         | 1,799.91               | -4.90                 | -8.86               | 241.06                 | 10.12                      |
| 1,900.00                 | 0.96               | 222.50         | 1,899.90               | -6.14                 | -9.91               | 238.23                 | 11.66                      |
| 2,000.00                 | 1.03               | 217.78         | 1,999.89               | -7.47                 | -11.03              | 235.90                 | 13.32                      |
| 2,100.00                 | 1.09               | 215.50         | 2,099.87               | -8.95                 | -12.13              | 233.58                 | 15.08                      |
| 2,200.00                 | 1.17               | 219.34         | 2,199.85               | -10.52                | -13.33              | 231.74                 | 16.98                      |
| 2,300.00                 | 1.16               | 217.51         | 2,299.83               | -12.11                | -14.60              | 230.32                 | 18.96                      |
| 2,400.00                 | 1.12               | 214.58         | 2,399.81               | -13.72                | -15.77              | 228.98                 | 20.90                      |
| 2,500.00                 | 0.99               | 207.78         | 2,499.79               | -15.29                | -16.72              | 227.57                 | 22.66                      |
| 2,600.00                 | 1.07               | 204.27         | 2,599.78               | -16.90                | -17.51              | 226.02                 | 24.34                      |
| 2,700.00                 | 1.04               | 212.00         | 2,699.76               | -18.52                | -18.38              | 224.77                 | 26.09                      |
| 2,800.00                 | 0.88               | 218.31         | 2,799.75               | -19.89                | -19.33              | 224.18                 | 27.74                      |
| 2,900.00                 | 0.83               | 221.65         | 2,899.73               | -21.04                | -20.29              | 223.96                 | 29.23                      |
| 3,000.00                 | 0.74               | 222.44         | 2,999.73               | -22.06                | -21.21              | 223.88                 | 30.60                      |
| 3,100.00                 | 0.73               | 220.76         | 3,099.72               | -23.01                | -22.06              | 223.79                 | 31.88                      |
| 3,200.00                 | 0.78               | 221.80         | 3,199.71               | -24.00                | -22.93              | 223.69                 | 33.19                      |
| 3,300.00                 | 0.77               | 225.92         | 3,299.70               | -24.98                | -23.86              | 223.69                 | 34.55                      |
| 3,400.00                 | 0.84               | 224.72         | 3,399.69               | -25.97                | -24.86              | 223.76                 | 35.95                      |
| 3,500.00                 | 0.88               | 224.76         | 3,499.68               | -27.03                | -25.92              | 223.79                 | 37.45                      |
| 3,600.00                 | 0.80               | 239.93         | 3,599.67               | -27.93                | -27.06              | 224.10                 | 38.89                      |
| 3,700.00                 | 0.89               | 245.36         | 3,699.66               | -28.60                | -28.37              | 224.77                 | 40.29                      |
| 3,800.00                 | 0.95               | 226.40         | 3,799.64               | -29.50                | -29.68              | 225.18                 | 41.85                      |
| 3,900.00                 | 0.91               | 229.11         | 3,899.63               | -30.59                | -30.88              | 225.27                 | 43.47                      |
| 4,000.00                 | 0.86               | 225.82         | 3,999.62               | -31.63                | -32.02              | 225.35                 | 45.01                      |
| 4,100.00                 | 0.97               | 231.25         | 4,099.61               | -32.68                | -33.22              | 225.46                 | 46.60                      |
| 4,200.00                 | 0.97               | 230.89         | 4,199.59               | -33.75                | -34.54              | 225.66                 | 48.29                      |
| 4,300.00                 | 0.65               | 256.96         | 4,299.58               | -34.41                | -35.74              | 226.09                 | 49.62                      |
| 4,400.00                 | 0.75               | 261.75         | 4,399.57               | -34.63                | -36.94              | 226.85                 | 50.64                      |
| 4,500.00                 | 0.96               | 268.42         | 4,499.56               | -34.75                | -38.43              | 227.88                 | 51.81                      |
| 4,600.00                 | 0.91               | 271.06         | 4,599.55               | -34.76                | -40.06              | 229.05                 | 53.04                      |
| 4,700.00                 | 0.88               | 272.19         | 4,699.54               | -34.71                | -41.62              | 230.17                 | 54.20                      |
| 4,800.00                 | 0.79               | 269.31         | 4,799.53               | -34.69                | -43.08              | 231.15                 | 55.31                      |
| 4,900.00                 | 0.73               | 259.06         | 4,899.52               | -34.82                | -44.39              | 231.89                 | 56.42                      |
| 5,000.00                 | 0.63               | 227.19         | 4,999.51               | -35.32                | -45.42              | 232.13                 | 57.54                      |



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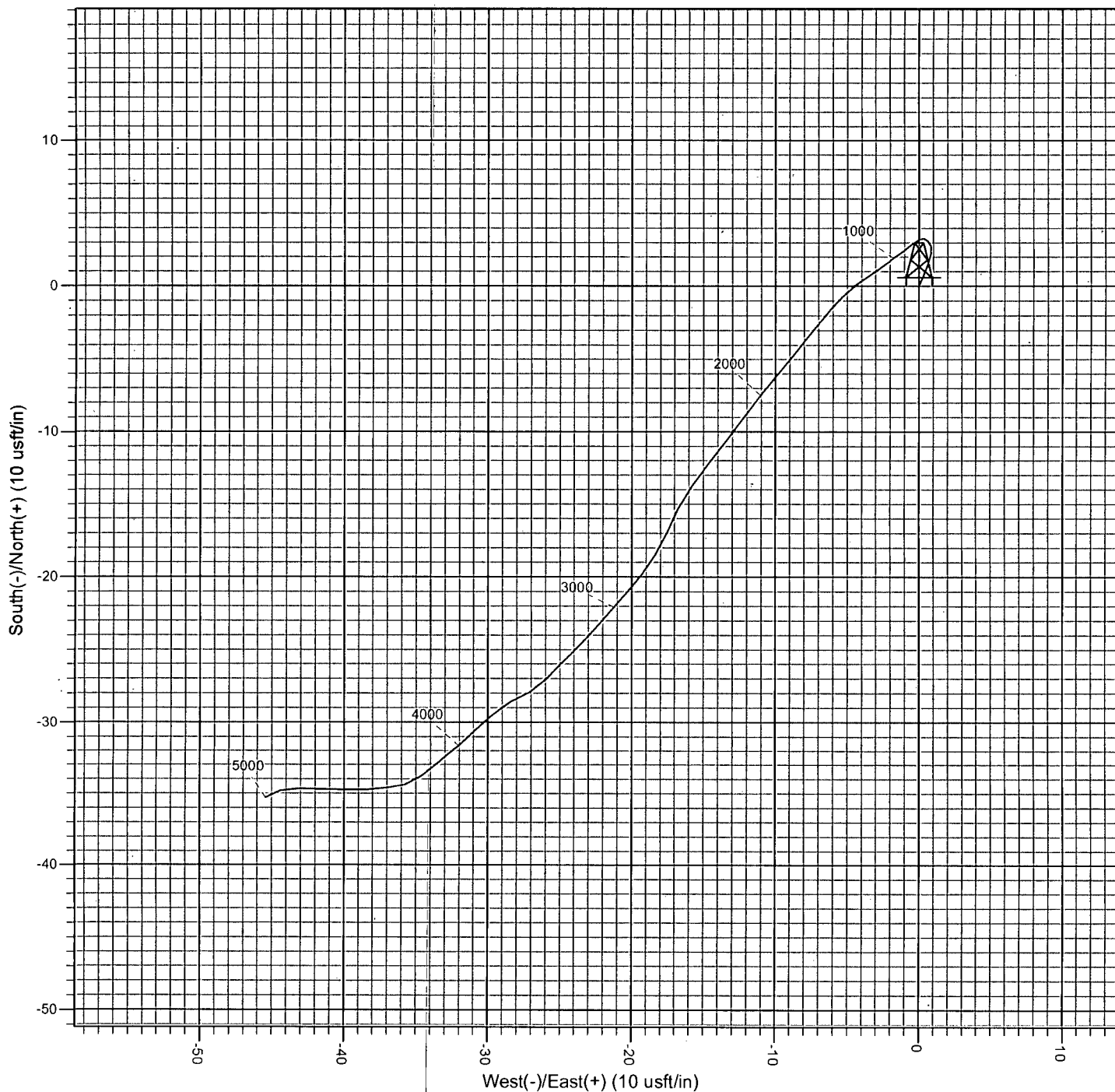
Project: Red Lake  
Eddy County, NM  
Well: Moncrief State #2  
Wellbore: VH - Job #32K10121343  
Design: VH - Job #32K10121343

WELL DETAILS: Moncrief State #2  
WELL @ 0.00usft (Original Well Elev)

+N/-S +E/-W Northing  
0.00 0.00 661711.06

Ground Level: 0.00  
Easting Latitude  
555707.03 32° 49' 8.400 N

Longitude Slot  
104° 9' 7.200 W



|                                                       |  |                                        |  |
|-------------------------------------------------------|--|----------------------------------------|--|
| <b>PROJECT DETAILS: Red Lake</b>                      |  | <b>SITE DETAILS: Eddy County, NM</b>   |  |
| Geodetic System: US State Plane 1927 (Exact solution) |  | Site Centre Latitude: 32° 49' 12.000 N |  |
| Datum: NAD 1927 (NADCON CONUS)                        |  | Longitude: 104° 8' 42.000 W            |  |
| Ellipsoid: Clarke 1866                                |  | Positional Uncertainty: 0.00           |  |
| Zone: New Mexico East 3001                            |  | Convergence: 0.10                      |  |
| System Datum: Mean Sea Level                          |  | Local North: Grid                      |  |