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**EMNRD-OCD ARTESIA**

## **COG Operating LLC**

**Eddy County, NM (NAD27 NME)**

**Quien Sabe Fed Com**

**602H**

**OH \ 65011**

**Design: Surveys (Ensign 155)**

## **Standard Survey Report**

**14 November, 2019**





## Survey Report



|           |                             |                              |                                |
|-----------|-----------------------------|------------------------------|--------------------------------|
| Company:  | COG Operating LLC           | Local Co-ordinate Reference: | Well 602H                      |
| Project:  | Eddy County, NM (NAD27 NME) | TVD Reference:               | RKB @ 3147.50usft (Ensign 155) |
| Site:     | Quien Sabe Fed Com          | MD Reference:                | RKB @ 3147.50usft (Ensign 155) |
| Well:     | 602H                        | North Reference:             | Grid                           |
| Wellbore: | OH \ 65011                  | Survey Calculation Method:   | Minimum Curvature              |
| Design:   | Surveys (Ensign 155)        | Database:                    | USA Compass                    |

|             |                                      |               |                |
|-------------|--------------------------------------|---------------|----------------|
| 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                  | Quien Sabe Fed Com |                   |                     |
| Site Position:        |                    | Northing:         | 439,517.00 usft     |
| From:                 | Map                | Easting:          | 559,042.60 usft     |
| Position Uncertainty: | 1.00 usft          | Slot Radius:      | 13-3/16 "           |
|                       |                    | Latitude:         | 32° 12' 29.538766 N |
|                       |                    | Longitude:        | 104° 8' 32.775379 W |
|                       |                    | Grid Convergence: | 0.10 °              |

|                      |           |                     |                     |
|----------------------|-----------|---------------------|---------------------|
| Well                 | 602H      |                     |                     |
| Well Position        | +N/-S     | 0.00 usft           | Northing:           |
|                      | +E/-W     | 0.00 usft           | Easting:            |
| Position Uncertainty | 1.00 usft | Wellhead Elevation: | usft                |
|                      |           | Latitude:           | 32° 12' 29.552556 N |
|                      |           | Longitude:          | 104° 8' 32.076983 W |
|                      |           | Ground Level:       | 3,123.50 usft       |

|           |              |             |                        |
|-----------|--------------|-------------|------------------------|
| Wellbore  | OH \ 65011   |             |                        |
| Magnetics | Model Name   | Sample Date | Declination<br>(°)     |
|           | User Defined | 10/23/2019  | 7.15                   |
|           |              |             | Dip Angle<br>(°)       |
|           |              |             | 59.89                  |
|           |              |             | Field Strength<br>(nT) |
|           |              |             | 47,826.40000000        |

|                   |                            |                 |                  |
|-------------------|----------------------------|-----------------|------------------|
| Design            | Surveys (Ensign 155)       |                 |                  |
| 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)  |
|                   | 0.00                       | 0.00            | 0.00             |
|                   |                            |                 | Direction<br>(°) |
|                   |                            |                 | 174.43           |

|                |                 |                                  |                                                    |
|----------------|-----------------|----------------------------------|----------------------------------------------------|
| Survey Program | Date 11/14/2019 |                                  |                                                    |
| From<br>(usft) | To<br>(usft)    | Survey (Wellbore)                | Tool Name                                          |
| 100.00         | 8,500.52        | SDI Gyro Surveys (OH \ 65011)    | Scientific Keeper                                  |
| 8,500.52       | 19,015.00       | Phoenix MWD Surveys (OH \ 65011) | MWD+IFR1+FDIR                                      |
|                |                 |                                  | Description                                        |
|                |                 |                                  | Scientific Drilling Intl. Standard Wireline Keeper |
|                |                 |                                  | OWSG MWD + IFR1 + FDIR Correction                  |

|                             |                    |                |                             |                 |                 |                               |                               |                              |                             |
|-----------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|
| Survey                      |                    |                |                             |                 |                 |                               |                               |                              |                             |
| Measured<br>Depth<br>(usft) | Inclination<br>(°) | Azimuth<br>(°) | Vertical<br>Depth<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Vertical<br>Section<br>(usft) | Dogleg<br>Rate<br>(°/100usft) | Build<br>Rate<br>(°/100usft) | Turn<br>Rate<br>(°/100usft) |
| 0.00                        | 0.00               | 0.00           | 0.00                        | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        |
| 100.00                      | 0.66               | 256.11         | 100.00                      | -0.14           | -0.56           | 0.08                          | 0.66                          | 0.66                         | 0.00                        |
| 125.00                      | 0.77               | 249.80         | 125.00                      | -0.23           | -0.86           | 0.15                          | 0.54                          | 0.44                         | -25.24                      |
| 150.00                      | 0.88               | 245.00         | 149.99                      | -0.37           | -1.19           | 0.25                          | 0.52                          | 0.44                         | -19.20                      |
| 175.00                      | 1.09               | 238.38         | 174.99                      | -0.58           | -1.56           | 0.42                          | 0.95                          | 0.84                         | -26.48                      |
| 200.00                      | 0.99               | 234.60         | 199.99                      | -0.83           | -1.94           | 0.63                          | 0.48                          | -0.40                        | -15.12                      |
| 225.00                      | 0.97               | 240.66         | 224.98                      | -1.05           | -2.30           | 0.83                          | 0.42                          | -0.08                        | 24.24                       |
| 250.00                      | 0.95               | 240.17         | 249.98                      | -1.26           | -2.67           | 1.00                          | 0.09                          | -0.08                        | -1.96                       |
| 275.00                      | 1.02               | 240.04         | 274.97                      | -1.48           | -3.04           | 1.17                          | 0.28                          | 0.28                         | -0.52                       |
| 300.00                      | 1.02               | 236.97         | 299.97                      | -1.71           | -3.42           | 1.37                          | 0.22                          | 0.00                         | -12.28                      |



## Survey Report



|           |                             |                              |                                |
|-----------|-----------------------------|------------------------------|--------------------------------|
| Company:  | COG Operating LLC           | Local Co-ordinate Reference: | Well 602H                      |
| Project:  | Eddy County, NM (NAD27 NME) | TVD Reference:               | RKB @ 3147.50usft (Ensign 155) |
| Site:     | Quien Sabe Fed Com          | MD Reference:                | RKB @ 3147.50usft (Ensign 155) |
| Well:     | 602H                        | North Reference:             | Grid                           |
| Wellbore: | OH \ 65011                  | Survey Calculation Method:   | Minimum Curvature              |
| Design:   | Surveys (Ensign 155)        | Database:                    | USA Compass                    |

| 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) |
| 325.00                | 0.96            | 236.86      | 324.97                | -1.94        | -3.78        | 1.57                    | 0.24                    | -0.24                  | -0.44                 |
| 350.00                | 0.92            | 238.52      | 349.96                | -2.16        | -4.13        | 1.75                    | 0.19                    | -0.16                  | 6.64                  |
| 375.00                | 1.09            | 236.12      | 374.96                | -2.40        | -4.50        | 1.95                    | 0.70                    | -0.68                  | -9.60                 |
| 400.00                | 0.99            | 222.10      | 399.96                | -2.69        | -4.84        | 2.21                    | 1.09                    | -0.40                  | -56.08                |
| 425.00                | 0.95            | 208.77      | 424.95                | -3.03        | -5.08        | 2.53                    | 0.91                    | -0.16                  | -53.32                |
| 450.00                | 1.05            | 194.03      | 449.95                | -3.44        | -5.24        | 2.91                    | 1.10                    | 0.40                   | -58.96                |
| 475.00                | 1.06            | 197.27      | 474.94                | -3.88        | -5.36        | 3.34                    | 0.24                    | 0.04                   | 12.96                 |
| 500.00                | 1.15            | 187.10      | 499.94                | -4.35        | -5.46        | 3.80                    | 0.86                    | 0.36                   | -40.68                |
| 525.00                | 1.23            | 185.40      | 524.93                | -4.87        | -5.52        | 4.31                    | 0.35                    | 0.32                   | -6.80                 |
| 550.00                | 1.36            | 180.79      | 549.93                | -5.43        | -5.55        | 4.87                    | 0.67                    | 0.52                   | -18.44                |
| 575.00                | 1.57            | 171.93      | 574.92                | -6.07        | -5.50        | 5.50                    | 1.23                    | 0.84                   | -35.44                |
| 600.00                | 1.70            | 165.54      | 599.91                | -6.77        | -5.36        | 6.21                    | 0.89                    | 0.52                   | -25.56                |
| 625.00                | 1.76            | 163.96      | 624.90                | -7.49        | -5.17        | 6.96                    | 0.31                    | 0.24                   | -6.32                 |
| 650.00                | 1.70            | 166.67      | 649.89                | -8.22        | -4.97        | 7.70                    | 0.41                    | -0.24                  | 10.84                 |
| 675.00                | 1.73            | 167.32      | 674.88                | -8.95        | -4.81        | 8.44                    | 0.14                    | 0.12                   | 2.60                  |
| 700.00                | 2.00            | 160.80      | 699.86                | -9.73        | -4.58        | 9.24                    | 1.37                    | 1.08                   | -26.08                |
| 725.00                | 2.04            | 158.21      | 724.85                | -10.56       | -4.27        | 10.09                   | 0.40                    | 0.16                   | -10.36                |
| 750.00                | 2.15            | 159.88      | 749.83                | -11.41       | -3.94        | 10.97                   | 0.50                    | 0.44                   | 6.68                  |
| 775.00                | 2.39            | 158.88      | 774.81                | -12.34       | -3.59        | 11.93                   | 0.97                    | 0.96                   | -4.00                 |
| 800.00                | 2.53            | 156.91      | 799.79                | -13.33       | -3.19        | 12.96                   | 0.65                    | 0.56                   | -7.88                 |
| 825.00                | 2.58            | 156.34      | 824.76                | -14.35       | -2.75        | 14.02                   | 0.22                    | 0.20                   | -2.28                 |
| 850.00                | 2.58            | 157.92      | 849.74                | -15.39       | -2.31        | 15.09                   | 0.28                    | 0.00                   | 6.32                  |
| 875.00                | 2.62            | 158.70      | 874.71                | -16.44       | -1.89        | 16.18                   | 0.21                    | 0.16                   | 3.12                  |
| 900.00                | 2.56            | 159.43      | 899.69                | -17.50       | -1.49        | 17.27                   | 0.27                    | -0.24                  | 2.92                  |
| 925.00                | 2.64            | 157.42      | 924.66                | -18.55       | -1.07        | 18.36                   | 0.49                    | 0.32                   | -8.04                 |
| 950.00                | 2.10            | 152.59      | 949.64                | -19.49       | -0.64        | 19.34                   | 2.30                    | -2.16                  | -19.32                |
| 975.00                | 1.54            | 143.09      | 974.63                | -20.17       | -0.23        | 20.05                   | 2.54                    | -2.24                  | -38.00                |
| 1,000.00              | 1.17            | 126.12      | 999.62                | -20.59       | 0.18         | 20.51                   | 2.17                    | -1.48                  | -67.88                |
| 1,025.00              | 0.85            | 108.75      | 1,024.62              | -20.80       | 0.56         | 20.75                   | 1.76                    | -1.28                  | -69.48                |
| 1,050.00              | 0.91            | 106.15      | 1,049.61              | -20.91       | 0.93         | 20.90                   | 0.29                    | 0.24                   | -10.40                |
| 1,075.00              | 0.93            | 106.56      | 1,074.61              | -21.02       | 1.31         | 21.05                   | 0.08                    | 0.08                   | 1.64                  |
| 1,100.00              | 0.91            | 107.52      | 1,099.61              | -21.14       | 1.70         | 21.21                   | 0.10                    | -0.08                  | 3.84                  |
| 1,125.00              | 0.89            | 94.25       | 1,124.60              | -21.22       | 2.08         | 21.32                   | 0.84                    | -0.08                  | -53.08                |
| 1,150.00              | 1.05            | 34.32       | 1,149.60              | -21.04       | 2.40         | 21.18                   | 3.92                    | 0.64                   | -239.72               |
| 1,175.00              | 1.45            | 9.61        | 1,174.59              | -20.54       | 2.59         | 20.69                   | 2.65                    | 1.60                   | -98.84                |
| 1,200.00              | 1.85            | 4.54        | 1,199.58              | -19.83       | 2.67         | 19.99                   | 1.70                    | 1.60                   | -20.28                |
| 1,225.00              | 2.10            | 0.65        | 1,224.57              | -18.97       | 2.71         | 19.14                   | 1.13                    | 1.00                   | -15.56                |
| 1,250.00              | 2.26            | 357.38      | 1,249.55              | -18.02       | 2.69         | 18.19                   | 0.81                    | 0.64                   | -13.08                |
| 1,275.00              | 2.19            | 357.15      | 1,274.53              | -17.05       | 2.64         | 17.22                   | 0.28                    | -0.28                  | -0.92                 |
| 1,300.00              | 2.29            | 356.72      | 1,299.51              | -16.07       | 2.59         | 16.25                   | 0.41                    | 0.40                   | -1.72                 |
| 1,325.00              | 2.29            | 357.46      | 1,324.49              | -15.07       | 2.54         | 15.25                   | 0.12                    | 0.00                   | 2.96                  |
| 1,350.00              | 2.28            | 355.40      | 1,349.47              | -14.08       | 2.48         | 14.25                   | 0.33                    | -0.04                  | -8.24                 |
| 1,375.00              | 2.36            | 355.53      | 1,374.45              | -13.07       | 2.40         | 13.24                   | 0.32                    | 0.32                   | 0.52                  |

|                  |                             |                                     |                                |
|------------------|-----------------------------|-------------------------------------|--------------------------------|
| <b>Company:</b>  | COG Operating LLC           | <b>Local Co-ordinate Reference:</b> | Well 602H                      |
| <b>Project:</b>  | Eddy County, NM (NAD27 NME) | <b>TVD Reference:</b>               | RKB @ 3147.50usft (Ensign 155) |
| <b>Site:</b>     | Quien Sabe Fed Com          | <b>MD Reference:</b>                | RKB @ 3147.50usft (Ensign 155) |
| <b>Well:</b>     | 602H                        | <b>North Reference:</b>             | Grid                           |
| <b>Wellbore:</b> | OH \ 65011                  | <b>Survey Calculation Method:</b>   | Minimum Curvature              |
| <b>Design:</b>   | Surveys (Ensign 155)        | <b>Database:</b>                    | USA Compass                    |

| 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) |
| 1,400.00              | 2.44            | 354.06      | 1,399.43              | -12.03       | 2.30         | 12.19                   | 0.40                    | 0.32                   | -5.88                 |
| 1,425.00              | 2.55            | 351.53      | 1,424.41              | -10.95       | 2.17         | 11.11                   | 0.62                    | 0.44                   | -10.12                |
| 1,450.00              | 2.67            | 350.35      | 1,449.38              | -9.82        | 1.99         | 9.97                    | 0.53                    | 0.48                   | -4.72                 |
| 1,475.00              | 2.86            | 349.60      | 1,474.35              | -8.64        | 1.78         | 8.77                    | 0.77                    | 0.76                   | -3.00                 |
| 1,500.00              | 2.85            | 348.15      | 1,499.32              | -7.41        | 1.54         | 7.53                    | 0.29                    | -0.04                  | -5.80                 |
| 1,525.00              | 2.85            | 350.14      | 1,524.29              | -6.19        | 1.30         | 6.29                    | 0.40                    | 0.00                   | 7.96                  |
| 1,550.00              | 2.86            | 349.27      | 1,549.26              | -4.97        | 1.08         | 5.05                    | 0.18                    | 0.04                   | -3.48                 |
| 1,575.00              | 2.77            | 351.66      | 1,574.23              | -3.76        | 0.88         | 3.83                    | 0.59                    | -0.36                  | 9.56                  |
| 1,600.00              | 2.72            | 0.39        | 1,599.20              | -2.57        | 0.79         | 2.63                    | 1.68                    | -0.20                  | 34.92                 |
| 1,625.00              | 2.47            | 12.90       | 1,624.17              | -1.45        | 0.92         | 1.53                    | 2.47                    | -1.00                  | 50.04                 |
| 1,650.00              | 2.55            | 23.32       | 1,649.15              | -0.41        | 1.26         | 0.53                    | 1.85                    | 0.32                   | 41.68                 |
| 1,675.00              | 2.62            | 39.41       | 1,674.13              | 0.54         | 1.84         | -0.36                   | 2.91                    | 0.28                   | 64.36                 |
| 1,700.00              | 3.17            | 53.76       | 1,699.09              | 1.39         | 2.76         | -1.11                   | 3.62                    | 2.20                   | 57.40                 |
| 1,725.00              | 3.69            | 62.31       | 1,724.05              | 2.17         | 4.03         | -1.77                   | 2.91                    | 2.08                   | 34.20                 |
| 1,750.00              | 4.42            | 65.19       | 1,748.99              | 2.95         | 5.62         | -2.39                   | 3.03                    | 2.92                   | 11.52                 |
| 1,775.00              | 4.57            | 67.93       | 1,773.91              | 3.73         | 7.42         | -2.99                   | 1.05                    | 0.60                   | 10.96                 |
| 1,800.00              | 4.69            | 69.10       | 1,798.83              | 4.47         | 9.29         | -3.54                   | 0.61                    | 0.48                   | 4.68                  |
| 1,825.00              | 4.78            | 69.37       | 1,823.74              | 5.20         | 11.22        | -4.08                   | 0.37                    | 0.36                   | 1.08                  |
| 1,850.00              | 4.78            | 68.57       | 1,848.66              | 5.95         | 13.17        | -4.64                   | 0.27                    | 0.00                   | -3.20                 |
| 1,875.00              | 4.78            | 70.17       | 1,873.57              | 6.68         | 15.12        | -5.18                   | 0.53                    | 0.00                   | 6.40                  |
| 1,900.00              | 4.80            | 70.69       | 1,898.48              | 7.38         | 17.08        | -5.69                   | 0.19                    | 0.08                   | 2.08                  |
| 1,925.00              | 4.78            | 69.02       | 1,923.39              | 8.10         | 19.04        | -6.21                   | 0.56                    | -0.08                  | -6.68                 |
| 1,950.00              | 4.73            | 68.70       | 1,948.31              | 8.85         | 20.98        | -6.77                   | 0.23                    | -0.20                  | -1.28                 |
| 1,975.00              | 4.47            | 66.93       | 1,973.23              | 9.60         | 22.83        | -7.34                   | 1.18                    | -1.04                  | -7.08                 |
| 2,000.00              | 4.26            | 66.93       | 1,998.15              | 10.35        | 24.58        | -7.91                   | 0.84                    | -0.84                  | 0.00                  |
| 2,025.00              | 4.14            | 66.68       | 2,023.09              | 11.07        | 26.27        | -8.47                   | 0.49                    | -0.48                  | -1.00                 |
| 2,050.00              | 3.69            | 65.77       | 2,048.03              | 11.76        | 27.83        | -9.00                   | 1.82                    | -1.80                  | -3.64                 |
| 2,075.00              | 3.29            | 68.91       | 2,072.98              | 12.34        | 29.23        | -9.45                   | 1.77                    | -1.60                  | 12.56                 |
| 2,100.00              | 2.66            | 72.58       | 2,097.95              | 12.78        | 30.45        | -9.76                   | 2.63                    | -2.52                  | 14.68                 |
| 2,125.00              | 2.57            | 76.01       | 2,122.92              | 13.09        | 31.55        | -9.96                   | 0.72                    | -0.36                  | 13.72                 |
| 2,150.00              | 2.54            | 78.01       | 2,147.90              | 13.34        | 32.64        | -10.10                  | 0.38                    | -0.12                  | 8.00                  |
| 2,175.00              | 2.60            | 83.11       | 2,172.87              | 13.52        | 33.74        | -10.18                  | 0.95                    | 0.24                   | 20.40                 |
| 2,200.00              | 2.78            | 86.44       | 2,197.85              | 13.62        | 34.91        | -10.17                  | 0.95                    | 0.72                   | 13.32                 |
| 2,225.00              | 2.81            | 89.93       | 2,222.82              | 13.66        | 36.13        | -10.09                  | 0.69                    | 0.12                   | 13.96                 |
| 2,250.00              | 2.96            | 90.04       | 2,247.78              | 13.66        | 37.39        | -9.97                   | 0.60                    | 0.60                   | 0.44                  |
| 2,275.00              | 2.99            | 90.05       | 2,272.75              | 13.66        | 38.68        | -9.84                   | 0.12                    | 0.12                   | 0.04                  |
| 2,300.00              | 2.98            | 89.85       | 2,297.72              | 13.66        | 39.99        | -9.72                   | 0.06                    | -0.04                  | -0.80                 |
| 2,325.00              | 3.01            | 89.44       | 2,322.68              | 13.67        | 41.29        | -9.60                   | 0.15                    | 0.12                   | -1.64                 |
| 2,350.00              | 2.91            | 83.47       | 2,347.65              | 13.75        | 42.58        | -9.55                   | 1.30                    | -0.40                  | -23.88                |
| 2,375.00              | 2.31            | 62.09       | 2,372.62              | 14.06        | 43.66        | -9.75                   | 4.53                    | -2.40                  | -85.52                |
| 2,400.00              | 2.30            | 47.21       | 2,397.60              | 14.63        | 44.47        | -10.25                  | 2.39                    | -0.04                  | -59.52                |
| 2,425.00              | 2.33            | 38.24       | 2,422.58              | 15.37        | 45.15        | -10.92                  | 1.45                    | 0.12                   | -35.88                |
| 2,450.00              | 2.38            | 31.37       | 2,447.56              | 16.22        | 45.74        | -11.70                  | 1.15                    | 0.20                   | -27.48                |

|                  |                             |                                     |                                |
|------------------|-----------------------------|-------------------------------------|--------------------------------|
| <b>Company:</b>  | COG Operating LLC           | <b>Local Co-ordinate Reference:</b> | Well 602H                      |
| <b>Project:</b>  | Eddy County, NM (NAD27 NME) | <b>TVD Reference:</b>               | RKB @ 3147.50usft (Ensign 155) |
| <b>Site:</b>     | Quien Sabe Fed Com          | <b>MD Reference:</b>                | RKB @ 3147.50usft (Ensign 155) |
| <b>Well:</b>     | 602H                        | <b>North Reference:</b>             | Grid                           |
| <b>Wellbore:</b> | OH \ 65011                  | <b>Survey Calculation Method:</b>   | Minimum Curvature              |
| <b>Design:</b>   | Surveys (Ensign 155)        | <b>Database:</b>                    | USA Compass                    |

| 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) |
| 2,475.00              | 2.52            | 28.44       | 2,472.54              | 17.14        | 46.27        | -12.57                  | 0.75                    | 0.56                   | -11.72                |
| 2,500.00              | 2.36            | 28.49       | 2,497.52              | 18.08        | 46.78        | -13.45                  | 0.64                    | -0.64                  | 0.20                  |
| 2,525.00              | 2.45            | 27.65       | 2,522.49              | 19.00        | 47.27        | -14.33                  | 0.39                    | 0.36                   | -3.36                 |
| 2,550.00              | 2.41            | 29.96       | 2,547.47              | 19.93        | 47.78        | -15.20                  | 0.42                    | -0.16                  | 9.24                  |
| 2,575.00              | 2.53            | 27.72       | 2,572.45              | 20.88        | 48.30        | -16.09                  | 0.62                    | 0.48                   | -8.96                 |
| 2,600.00              | 2.55            | 28.17       | 2,597.42              | 21.86        | 48.82        | -17.01                  | 0.11                    | 0.08                   | 1.80                  |
| 2,625.00              | 2.54            | 29.69       | 2,622.40              | 22.83        | 49.35        | -17.93                  | 0.27                    | -0.04                  | 6.08                  |
| 2,650.00              | 2.66            | 35.65       | 2,647.37              | 23.78        | 49.97        | -18.82                  | 1.18                    | 0.48                   | 23.84                 |
| 2,675.00              | 2.91            | 42.70       | 2,672.34              | 24.72        | 50.74        | -19.68                  | 1.69                    | 1.00                   | 28.20                 |
| 2,700.00              | 3.09            | 45.35       | 2,697.31              | 25.66        | 51.65        | -20.52                  | 0.91                    | 0.72                   | 10.60                 |
| 2,725.00              | 3.20            | 48.87       | 2,722.27              | 26.59        | 52.65        | -21.35                  | 0.89                    | 0.44                   | 14.08                 |
| 2,750.00              | 3.19            | 46.94       | 2,747.23              | 27.52        | 53.68        | -22.18                  | 0.43                    | -0.04                  | -7.72                 |
| 2,775.00              | 3.22            | 48.78       | 2,772.19              | 28.46        | 54.72        | -23.02                  | 0.43                    | 0.12                   | 7.36                  |
| 2,800.00              | 3.22            | 47.43       | 2,797.16              | 29.40        | 55.77        | -23.85                  | 0.30                    | 0.00                   | -5.40                 |
| 2,825.00              | 3.20            | 48.77       | 2,822.12              | 30.33        | 56.81        | -24.68                  | 0.31                    | -0.08                  | 5.36                  |
| 2,850.00              | 2.80            | 60.36       | 2,847.08              | 31.10        | 57.86        | -25.33                  | 2.90                    | -1.60                  | 46.36                 |
| 2,875.00              | 2.68            | 66.53       | 2,872.05              | 31.63        | 58.93        | -25.76                  | 1.27                    | -0.48                  | 24.68                 |
| 2,900.00              | 2.68            | 69.63       | 2,897.03              | 32.07        | 60.01        | -26.09                  | 0.58                    | 0.00                   | 12.40                 |
| 2,925.00              | 2.75            | 72.36       | 2,922.00              | 32.45        | 61.13        | -26.37                  | 0.59                    | 0.28                   | 10.92                 |
| 2,950.00              | 2.64            | 74.19       | 2,946.97              | 32.79        | 62.26        | -26.59                  | 0.56                    | -0.44                  | 7.32                  |
| 2,975.00              | 2.67            | 75.02       | 2,971.94              | 33.10        | 63.38        | -26.79                  | 0.20                    | 0.12                   | 3.32                  |
| 3,000.00              | 2.74            | 74.76       | 2,996.92              | 33.41        | 64.51        | -26.99                  | 0.28                    | 0.28                   | -1.04                 |
| 3,025.00              | 2.81            | 75.21       | 3,021.89              | 33.72        | 65.68        | -27.18                  | 0.29                    | 0.28                   | 1.80                  |
| 3,050.00              | 2.91            | 75.39       | 3,046.86              | 34.04        | 66.89        | -27.38                  | 0.40                    | 0.40                   | 0.72                  |
| 3,075.00              | 2.95            | 74.65       | 3,071.82              | 34.37        | 68.12        | -27.59                  | 0.22                    | 0.16                   | -2.96                 |
| 3,100.00              | 2.96            | 74.24       | 3,096.79              | 34.71        | 69.37        | -27.82                  | 0.09                    | 0.04                   | -1.64                 |
| 3,125.00              | 2.94            | 74.65       | 3,121.76              | 35.06        | 70.61        | -28.04                  | 0.12                    | -0.08                  | 1.64                  |
| 3,150.00              | 3.01            | 74.76       | 3,146.72              | 35.40        | 71.86        | -28.26                  | 0.28                    | 0.28                   | 0.44                  |
| 3,175.00              | 3.02            | 75.20       | 3,171.69              | 35.74        | 73.13        | -28.47                  | 0.10                    | 0.04                   | 1.76                  |
| 3,200.00              | 3.03            | 75.27       | 3,196.65              | 36.08        | 74.40        | -28.68                  | 0.04                    | 0.04                   | 0.28                  |
| 3,225.00              | 2.43            | 68.13       | 3,221.62              | 36.44        | 75.53        | -28.94                  | 2.75                    | -2.40                  | -28.56                |
| 3,250.00              | 2.31            | 67.37       | 3,246.60              | 36.83        | 76.49        | -29.23                  | 0.50                    | -0.48                  | -3.04                 |
| 3,275.00              | 2.23            | 66.78       | 3,271.58              | 37.22        | 77.40        | -29.53                  | 0.33                    | -0.32                  | -2.36                 |
| 3,300.00              | 2.26            | 67.58       | 3,296.56              | 37.60        | 78.30        | -29.82                  | 0.17                    | 0.12                   | 3.20                  |
| 3,325.00              | 2.25            | 66.67       | 3,321.55              | 37.98        | 79.21        | -30.11                  | 0.15                    | -0.04                  | -3.64                 |
| 3,350.00              | 2.27            | 64.20       | 3,346.53              | 38.39        | 80.11        | -30.43                  | 0.40                    | 0.08                   | -9.88                 |
| 3,375.00              | 2.27            | 65.43       | 3,371.51              | 38.81        | 81.00        | -30.77                  | 0.19                    | 0.00                   | 4.92                  |
| 3,400.00              | 2.28            | 65.14       | 3,396.49              | 39.23        | 81.91        | -31.09                  | 0.06                    | 0.04                   | -1.16                 |
| 3,425.00              | 2.37            | 64.58       | 3,421.47              | 39.66        | 82.82        | -31.43                  | 0.37                    | 0.36                   | -2.24                 |
| 3,450.00              | 2.33            | 65.63       | 3,446.44              | 40.09        | 83.75        | -31.77                  | 0.24                    | -0.16                  | 4.20                  |
| 3,475.00              | 2.44            | 64.73       | 3,471.42              | 40.53        | 84.70        | -32.11                  | 0.46                    | 0.44                   | -3.60                 |
| 3,500.00              | 2.35            | 67.28       | 3,496.40              | 40.95        | 85.65        | -32.44                  | 0.56                    | -0.36                  | 10.20                 |
| 3,525.00              | 2.40            | 66.03       | 3,521.38              | 41.36        | 86.60        | -32.76                  | 0.29                    | 0.20                   | -5.00                 |
| 3,550.00              | 2.40            | 64.29       | 3,546.36              | 41.80        | 87.55        | -33.11                  | 0.29                    | 0.00                   | -6.96                 |



## Survey Report



|           |                             |                              |                                |
|-----------|-----------------------------|------------------------------|--------------------------------|
| Company:  | COG Operating LLC           | Local Co-ordinate Reference: | Well 602H                      |
| Project:  | Eddy County, NM (NAD27 NME) | TVD Reference:               | RKB @ 3147.50usft (Ensign 155) |
| Site:     | Quien Sabe Fed Com          | MD Reference:                | RKB @ 3147.50usft (Ensign 155) |
| Well:     | 602H                        | North Reference:             | Grid                           |
| Wellbore: | OH \ 65011                  | Survey Calculation Method:   | Minimum Curvature              |
| Design:   | Surveys (Ensign 155)        | Database:                    | USA Compass                    |

## 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) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 3,575.00              | 2.41            | 66.72       | 3,571.34              | 42.24        | 88.51        | -33.45                  | 0.41                    | 0.04                   | 9.72                  |
| 3,600.00              | 2.27            | 73.40       | 3,596.32              | 42.59        | 89.46        | -33.70                  | 1.23                    | -0.56                  | 26.72                 |
| 3,625.00              | 2.22            | 78.43       | 3,621.30              | 42.82        | 90.41        | -33.85                  | 0.81                    | -0.20                  | 20.12                 |
| 3,650.00              | 2.23            | 79.40       | 3,646.28              | 43.01        | 91.37        | -33.94                  | 0.16                    | 0.04                   | 3.88                  |
| 3,675.00              | 2.36            | 80.78       | 3,671.26              | 43.18        | 92.35        | -34.01                  | 0.56                    | 0.52                   | 5.52                  |
| 3,700.00              | 2.35            | 82.52       | 3,696.24              | 43.33        | 93.37        | -34.06                  | 0.29                    | -0.04                  | 6.96                  |
| 3,725.00              | 2.33            | 85.13       | 3,721.22              | 43.44        | 94.38        | -34.08                  | 0.43                    | -0.08                  | 10.44                 |
| 3,750.00              | 2.40            | 84.07       | 3,746.19              | 43.54        | 95.41        | -34.07                  | 0.33                    | 0.28                   | -4.24                 |
| 3,775.00              | 2.40            | 82.31       | 3,771.17              | 43.66        | 96.45        | -34.10                  | 0.29                    | 0.00                   | -7.04                 |
| 3,800.00              | 2.50            | 83.77       | 3,796.15              | 43.79        | 97.51        | -34.12                  | 0.47                    | 0.40                   | 5.84                  |
| 3,825.00              | 2.38            | 84.14       | 3,821.13              | 43.90        | 98.57        | -34.13                  | 0.48                    | -0.48                  | 1.48                  |
| 3,850.00              | 2.47            | 83.08       | 3,846.10              | 44.02        | 99.62        | -34.15                  | 0.40                    | 0.36                   | -4.24                 |
| 3,875.00              | 2.64            | 82.99       | 3,871.08              | 44.16        | 100.73       | -34.17                  | 0.68                    | 0.68                   | -0.36                 |
| 3,900.00              | 2.73            | 84.60       | 3,896.05              | 44.28        | 101.89       | -34.19                  | 0.47                    | 0.36                   | 6.44                  |
| 3,925.00              | 2.69            | 85.07       | 3,921.02              | 44.39        | 103.07       | -34.18                  | 0.18                    | -0.16                  | 1.88                  |
| 3,950.00              | 2.83            | 84.87       | 3,945.99              | 44.50        | 104.27       | -34.17                  | 0.56                    | 0.56                   | -0.80                 |
| 3,975.00              | 2.78            | 82.85       | 3,970.96              | 44.63        | 105.48       | -34.18                  | 0.44                    | -0.20                  | -8.08                 |
| 4,000.00              | 2.91            | 84.88       | 3,995.93              | 44.76        | 106.72       | -34.19                  | 0.66                    | 0.52                   | 8.12                  |
| 4,025.00              | 2.88            | 83.49       | 4,020.90              | 44.89        | 107.97       | -34.19                  | 0.31                    | -0.12                  | -5.56                 |
| 4,050.00              | 2.88            | 82.69       | 4,045.87              | 45.04        | 109.22       | -34.22                  | 0.16                    | 0.00                   | -3.20                 |
| 4,075.00              | 2.58            | 72.60       | 4,070.84              | 45.29        | 110.38       | -34.36                  | 2.26                    | -1.20                  | -40.36                |
| 4,100.00              | 2.47            | 71.27       | 4,095.82              | 45.63        | 111.43       | -34.60                  | 0.50                    | -0.44                  | -5.32                 |
| 4,125.00              | 2.44            | 68.80       | 4,120.80              | 45.99        | 112.43       | -34.86                  | 0.44                    | -0.12                  | -9.88                 |
| 4,150.00              | 2.52            | 69.19       | 4,145.77              | 46.38        | 113.44       | -35.15                  | 0.33                    | 0.32                   | 1.56                  |
| 4,175.00              | 2.50            | 70.39       | 4,170.75              | 46.76        | 114.47       | -35.43                  | 0.22                    | -0.08                  | 4.80                  |
| 4,200.00              | 2.44            | 69.95       | 4,195.72              | 47.12        | 115.48       | -35.69                  | 0.25                    | -0.24                  | -1.76                 |
| 4,225.00              | 2.45            | 69.11       | 4,220.70              | 47.50        | 116.48       | -35.97                  | 0.15                    | 0.04                   | -3.36                 |
| 4,250.00              | 2.49            | 68.57       | 4,245.68              | 47.89        | 117.49       | -36.26                  | 0.19                    | 0.16                   | -2.16                 |
| 4,275.00              | 2.62            | 66.56       | 4,270.65              | 48.31        | 118.52       | -36.58                  | 0.63                    | 0.52                   | -8.04                 |
| 4,300.00              | 2.75            | 67.18       | 4,295.63              | 48.77        | 119.59       | -36.93                  | 0.53                    | 0.52                   | 2.48                  |
| 4,325.00              | 2.84            | 68.11       | 4,320.60              | 49.23        | 120.72       | -37.28                  | 0.40                    | 0.36                   | 3.72                  |
| 4,350.00              | 2.85            | 65.93       | 4,345.57              | 49.72        | 121.86       | -37.66                  | 0.43                    | 0.04                   | -8.72                 |
| 4,375.00              | 2.99            | 66.00       | 4,370.53              | 50.24        | 123.03       | -38.06                  | 0.56                    | 0.56                   | 0.28                  |
| 4,400.00              | 3.07            | 63.04       | 4,395.50              | 50.81        | 124.22       | -38.51                  | 0.70                    | 0.32                   | -11.84                |
| 4,425.00              | 3.09            | 64.22       | 4,420.46              | 51.40        | 125.42       | -38.99                  | 0.27                    | 0.08                   | 4.72                  |
| 4,450.00              | 3.21            | 64.15       | 4,445.42              | 52.00        | 126.66       | -39.46                  | 0.48                    | 0.48                   | -0.28                 |
| 4,475.00              | 3.33            | 65.02       | 4,470.38              | 52.61        | 127.95       | -39.95                  | 0.52                    | 0.48                   | 3.48                  |
| 4,500.00              | 3.46            | 63.64       | 4,495.34              | 53.25        | 129.28       | -40.46                  | 0.61                    | 0.52                   | -5.52                 |
| 4,525.00              | 3.44            | 64.01       | 4,520.29              | 53.92        | 130.63       | -40.98                  | 0.12                    | -0.08                  | 1.48                  |
| 4,550.00              | 3.49            | 63.90       | 4,545.25              | 54.58        | 131.99       | -41.51                  | 0.20                    | 0.20                   | -0.44                 |
| 4,575.00              | 3.53            | 64.63       | 4,570.20              | 55.25        | 133.37       | -42.04                  | 0.24                    | 0.16                   | 2.92                  |
| 4,600.00              | 3.55            | 63.14       | 4,595.15              | 55.93        | 134.75       | -42.58                  | 0.38                    | 0.08                   | -5.96                 |
| 4,625.00              | 3.58            | 64.35       | 4,620.11              | 56.61        | 136.15       | -43.13                  | 0.32                    | 0.12                   | 4.84                  |

|                  |                             |                                     |                                |
|------------------|-----------------------------|-------------------------------------|--------------------------------|
| <b>Company:</b>  | COG Operating LLC           | <b>Local Co-ordinate Reference:</b> | Well 602H                      |
| <b>Project:</b>  | Eddy County, NM (NAD27 NME) | <b>TVD Reference:</b>               | RKB @ 3147.50usft (Ensign 155) |
| <b>Site:</b>     | Quien Sabe Fed Com          | <b>MD Reference:</b>                | RKB @ 3147.50usft (Ensign 155) |
| <b>Well:</b>     | 602H                        | <b>North Reference:</b>             | Grid                           |
| <b>Wellbore:</b> | OH \ 65011                  | <b>Survey Calculation Method:</b>   | Minimum Curvature              |
| <b>Design:</b>   | Surveys (Ensign 155)        | <b>Database:</b>                    | USA Compass                    |

| 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) |
| 4,650.00              | 3.59            | 62.97       | 4,645.06              | 57.31        | 137.55       | -43.69                  | 0.35                    | 0.04                   | -5.52                 |
| 4,675.00              | 3.58            | 64.47       | 4,670.01              | 58.00        | 138.95       | -44.24                  | 0.38                    | -0.04                  | 6.00                  |
| 4,700.00              | 3.52            | 65.57       | 4,694.96              | 58.65        | 140.35       | -44.75                  | 0.36                    | -0.24                  | 4.40                  |
| 4,725.00              | 3.16            | 72.14       | 4,719.92              | 59.18        | 141.71       | -45.15                  | 2.10                    | -1.44                  | 26.28                 |
| 4,750.00              | 2.71            | 78.45       | 4,744.88              | 59.51        | 142.94       | -45.36                  | 2.21                    | -1.80                  | 25.24                 |
| 4,775.00              | 2.48            | 84.94       | 4,769.86              | 59.68        | 144.06       | -45.41                  | 1.49                    | -0.92                  | 25.96                 |
| 4,800.00              | 2.45            | 92.51       | 4,794.84              | 59.70        | 145.13       | -45.33                  | 1.31                    | -0.12                  | 30.28                 |
| 4,825.00              | 2.38            | 93.17       | 4,819.81              | 59.65        | 146.18       | -45.18                  | 0.30                    | -0.28                  | 2.64                  |
| 4,850.00              | 2.35            | 95.52       | 4,844.79              | 59.57        | 147.21       | -45.00                  | 0.41                    | -0.12                  | 9.40                  |
| 4,875.00              | 2.41            | 95.87       | 4,869.77              | 59.47        | 148.25       | -44.80                  | 0.25                    | 0.24                   | 1.40                  |
| 4,900.00              | 2.43            | 95.35       | 4,894.75              | 59.37        | 149.30       | -44.59                  | 0.12                    | 0.08                   | -2.08                 |
| 4,925.00              | 2.39            | 95.60       | 4,919.73              | 59.27        | 150.34       | -44.39                  | 0.17                    | -0.16                  | 1.00                  |
| 4,950.00              | 2.44            | 97.84       | 4,944.70              | 59.14        | 151.39       | -44.17                  | 0.43                    | 0.20                   | 8.96                  |
| 4,975.00              | 2.50            | 96.12       | 4,969.68              | 59.01        | 152.46       | -43.93                  | 0.38                    | 0.24                   | -6.88                 |
| 5,000.00              | 2.52            | 97.11       | 4,994.66              | 58.88        | 153.55       | -43.70                  | 0.19                    | 0.08                   | 3.96                  |
| 5,025.00              | 2.54            | 97.51       | 5,019.63              | 58.74        | 154.64       | -43.46                  | 0.11                    | 0.08                   | 1.60                  |
| 5,050.00              | 2.49            | 98.01       | 5,044.61              | 58.60        | 155.73       | -43.20                  | 0.22                    | -0.20                  | 2.00                  |
| 5,075.00              | 2.55            | 99.28       | 5,069.58              | 58.43        | 156.81       | -42.93                  | 0.33                    | 0.24                   | 5.08                  |
| 5,100.00              | 2.50            | 98.51       | 5,094.56              | 58.26        | 157.90       | -42.66                  | 0.24                    | -0.20                  | -3.08                 |
| 5,125.00              | 2.51            | 96.32       | 5,119.54              | 58.12        | 158.99       | -42.41                  | 0.38                    | 0.04                   | -8.76                 |
| 5,150.00              | 2.60            | 96.49       | 5,144.51              | 58.00        | 160.09       | -42.18                  | 0.36                    | 0.36                   | 0.68                  |
| 5,175.00              | 2.60            | 97.55       | 5,169.49              | 57.86        | 161.22       | -41.94                  | 0.19                    | 0.00                   | 4.24                  |
| 5,200.00              | 2.62            | 95.41       | 5,194.46              | 57.73        | 162.35       | -41.70                  | 0.40                    | 0.08                   | -8.56                 |
| 5,225.00              | 2.81            | 94.71       | 5,219.43              | 57.62        | 163.53       | -41.48                  | 0.77                    | 0.76                   | -2.80                 |
| 5,250.00              | 2.82            | 94.56       | 5,244.40              | 57.52        | 164.75       | -41.26                  | 0.05                    | 0.04                   | -0.60                 |
| 5,275.00              | 2.89            | 93.84       | 5,269.37              | 57.43        | 165.99       | -41.05                  | 0.31                    | 0.28                   | -2.88                 |
| 5,300.00              | 2.88            | 93.46       | 5,294.34              | 57.35        | 167.25       | -40.85                  | 0.09                    | -0.04                  | -1.52                 |
| 5,325.00              | 2.90            | 94.84       | 5,319.31              | 57.26        | 168.51       | -40.64                  | 0.29                    | 0.08                   | 5.52                  |
| 5,350.00              | 2.93            | 93.97       | 5,344.27              | 57.16        | 169.77       | -40.42                  | 0.21                    | 0.12                   | -3.48                 |
| 5,375.00              | 2.85            | 91.93       | 5,369.24              | 57.10        | 171.03       | -40.23                  | 0.52                    | -0.32                  | -8.16                 |
| 5,400.00              | 2.74            | 85.87       | 5,394.21              | 57.12        | 172.25       | -40.13                  | 1.26                    | -0.44                  | -24.24                |
| 5,425.00              | 2.59            | 86.18       | 5,419.19              | 57.20        | 173.41       | -40.10                  | 0.60                    | -0.60                  | 1.24                  |
| 5,450.00              | 2.63            | 84.39       | 5,444.16              | 57.30        | 174.54       | -40.08                  | 0.36                    | 0.16                   | -7.16                 |
| 5,475.00              | 2.64            | 84.64       | 5,469.13              | 57.41        | 175.69       | -40.08                  | 0.06                    | 0.04                   | 1.00                  |
| 5,500.00              | 2.66            | 84.92       | 5,494.11              | 57.51        | 176.84       | -40.08                  | 0.10                    | 0.08                   | 1.12                  |
| 5,525.00              | 2.66            | 84.50       | 5,519.08              | 57.62        | 178.00       | -40.07                  | 0.08                    | 0.00                   | -1.68                 |
| 5,550.00              | 2.64            | 84.83       | 5,544.05              | 57.73        | 179.15       | -40.06                  | 0.10                    | -0.08                  | 1.32                  |
| 5,575.00              | 2.64            | 84.64       | 5,569.03              | 57.83        | 180.29       | -40.06                  | 0.04                    | 0.00                   | -0.76                 |
| 5,600.00              | 2.78            | 85.23       | 5,594.00              | 57.94        | 181.47       | -40.05                  | 0.57                    | 0.56                   | 2.36                  |
| 5,625.00              | 2.77            | 84.50       | 5,618.97              | 58.04        | 182.68       | -40.04                  | 0.15                    | -0.04                  | -2.92                 |
| 5,650.00              | 2.84            | 85.47       | 5,643.94              | 58.15        | 183.89       | -40.03                  | 0.34                    | 0.28                   | 3.88                  |
| 5,675.00              | 2.98            | 83.00       | 5,668.91              | 58.28        | 185.16       | -40.03                  | 0.75                    | 0.56                   | -9.88                 |
| 5,700.00              | 3.09            | 80.23       | 5,693.87              | 58.47        | 186.47       | -40.10                  | 0.73                    | 0.44                   | -11.08                |



## Survey Report



|           |                             |                              |                                |
|-----------|-----------------------------|------------------------------|--------------------------------|
| Company:  | COG Operating LLC           | Local Co-ordinate Reference: | Well 602H                      |
| Project:  | Eddy County, NM (NAD27 NME) | TVD Reference:               | RKB @ 3147.50usft (Ensign 155) |
| Site:     | Quien Sabe Fed Com          | MD Reference:                | RKB @ 3147.50usft (Ensign 155) |
| Well:     | 602H                        | North Reference:             | Grid                           |
| Wellbore: | OH \ 65011                  | Survey Calculation Method:   | Minimum Curvature              |
| Design:   | Surveys (Ensign 155)        | Database:                    | USA Compass                    |

| 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) |
| 5,725.00              | 3.19            | 80.77       | 5,718.83              | 58.70        | 187.82       | -40.19                  | 0.42                    | 0.40                   | 2.16                  |
| 5,750.00              | 3.46            | 75.90       | 5,743.79              | 58.99        | 189.23       | -40.35                  | 1.56                    | 1.08                   | -19.48                |
| 5,775.00              | 3.63            | 76.89       | 5,768.75              | 59.36        | 190.74       | -40.56                  | 0.72                    | 0.68                   | 3.96                  |
| 5,800.00              | 4.01            | 73.50       | 5,793.69              | 59.78        | 192.35       | -40.83                  | 1.77                    | 1.52                   | -13.56                |
| 5,825.00              | 4.14            | 71.37       | 5,818.63              | 60.32        | 194.04       | -41.20                  | 0.80                    | 0.52                   | -8.52                 |
| 5,850.00              | 4.16            | 71.87       | 5,843.56              | 60.89        | 195.76       | -41.60                  | 0.17                    | 0.08                   | 2.00                  |
| 5,875.00              | 4.19            | 71.21       | 5,868.49              | 61.47        | 197.48       | -42.01                  | 0.23                    | 0.12                   | -2.64                 |
| 5,900.00              | 4.20            | 71.06       | 5,893.43              | 62.06        | 199.21       | -42.43                  | 0.06                    | 0.04                   | -0.60                 |
| 5,925.00              | 4.20            | 71.58       | 5,918.36              | 62.65        | 200.95       | -42.85                  | 0.15                    | 0.00                   | 2.08                  |
| 5,950.00              | 4.37            | 70.31       | 5,943.29              | 63.26        | 202.71       | -43.28                  | 0.78                    | 0.68                   | -5.08                 |
| 5,975.00              | 4.34            | 71.38       | 5,968.22              | 63.88        | 204.51       | -43.73                  | 0.35                    | -0.12                  | 4.28                  |
| 6,000.00              | 4.26            | 71.35       | 5,993.15              | 64.48        | 206.28       | -44.15                  | 0.32                    | -0.32                  | -0.12                 |
| 6,025.00              | 4.17            | 71.63       | 6,018.08              | 65.06        | 208.02       | -44.56                  | 0.37                    | -0.36                  | 1.12                  |
| 6,050.00              | 4.22            | 71.53       | 6,043.01              | 65.64        | 209.76       | -44.97                  | 0.20                    | 0.20                   | -0.40                 |
| 6,075.00              | 4.18            | 70.68       | 6,067.95              | 66.23        | 211.49       | -45.39                  | 0.30                    | -0.16                  | -3.40                 |
| 6,100.00              | 4.20            | 70.88       | 6,092.88              | 66.83        | 213.22       | -45.82                  | 0.10                    | 0.08                   | 0.80                  |
| 6,125.00              | 4.17            | 69.76       | 6,117.81              | 67.45        | 214.93       | -46.27                  | 0.35                    | -0.12                  | -4.48                 |
| 6,150.00              | 4.07            | 69.49       | 6,142.75              | 68.07        | 216.62       | -46.73                  | 0.41                    | -0.40                  | -1.08                 |
| 6,175.00              | 3.92            | 68.70       | 6,167.69              | 68.69        | 218.25       | -47.19                  | 0.64                    | -0.60                  | -3.16                 |
| 6,200.00              | 3.90            | 66.44       | 6,192.63              | 69.34        | 219.82       | -47.68                  | 0.62                    | -0.08                  | -9.04                 |
| 6,225.00              | 3.80            | 66.50       | 6,217.57              | 70.01        | 221.36       | -48.20                  | 0.40                    | -0.40                  | 0.24                  |
| 6,250.00              | 3.79            | 66.52       | 6,242.52              | 70.67        | 222.88       | -48.71                  | 0.04                    | -0.04                  | 0.08                  |
| 6,275.00              | 3.88            | 66.47       | 6,267.46              | 71.34        | 224.41       | -49.22                  | 0.36                    | 0.36                   | -0.20                 |
| 6,300.00              | 3.85            | 64.85       | 6,292.41              | 72.04        | 225.95       | -49.76                  | 0.45                    | -0.12                  | -6.48                 |
| 6,325.00              | 3.90            | 58.58       | 6,317.35              | 72.84        | 227.43       | -50.42                  | 1.71                    | 0.20                   | -25.08                |
| 6,350.00              | 3.96            | 52.40       | 6,342.29              | 73.80        | 228.84       | -51.24                  | 1.71                    | 0.24                   | -24.72                |
| 6,375.00              | 3.97            | 50.04       | 6,367.23              | 74.89        | 230.19       | -52.19                  | 0.65                    | 0.04                   | -9.44                 |
| 6,400.00              | 4.19            | 47.16       | 6,392.17              | 76.06        | 231.52       | -53.23                  | 1.20                    | 0.88                   | -11.52                |
| 6,425.00              | 4.24            | 46.46       | 6,417.10              | 77.32        | 232.86       | -54.35                  | 0.29                    | 0.20                   | -2.80                 |
| 6,450.00              | 4.61            | 44.45       | 6,442.02              | 78.68        | 234.23       | -55.57                  | 1.60                    | 1.48                   | -8.04                 |
| 6,475.00              | 4.41            | 44.51       | 6,466.95              | 80.08        | 235.61       | -56.83                  | 0.80                    | -0.80                  | 0.24                  |
| 6,500.00              | 4.52            | 46.73       | 6,491.87              | 81.44        | 237.00       | -58.05                  | 0.82                    | 0.44                   | 8.88                  |
| 6,525.00              | 4.39            | 42.10       | 6,516.80              | 82.82        | 238.36       | -59.30                  | 1.53                    | -0.52                  | -18.52                |
| 6,550.00              | 4.28            | 37.83       | 6,541.72              | 84.27        | 239.58       | -60.62                  | 1.36                    | -0.44                  | -17.08                |
| 6,575.00              | 4.43            | 32.93       | 6,566.65              | 85.82        | 240.67       | -62.05                  | 1.60                    | 0.60                   | -19.60                |
| 6,600.00              | 4.44            | 33.11       | 6,591.58              | 87.44        | 241.73       | -63.56                  | 0.07                    | 0.04                   | 0.72                  |
| 6,625.00              | 4.45            | 32.21       | 6,616.50              | 89.07        | 242.77       | -65.09                  | 0.28                    | 0.04                   | -3.60                 |
| 6,650.00              | 4.43            | 33.18       | 6,641.43              | 90.70        | 243.82       | -66.61                  | 0.31                    | -0.08                  | 3.88                  |
| 6,675.00              | 4.44            | 32.40       | 6,666.35              | 92.32        | 244.86       | -68.12                  | 0.24                    | 0.04                   | -3.12                 |
| 6,700.00              | 4.68            | 31.42       | 6,691.27              | 94.01        | 245.91       | -69.70                  | 1.01                    | 0.96                   | -3.92                 |
| 6,725.00              | 4.69            | 32.64       | 6,716.19              | 95.74        | 247.00       | -71.32                  | 0.40                    | 0.04                   | 4.88                  |
| 6,750.00              | 4.55            | 31.70       | 6,741.11              | 97.45        | 248.07       | -72.91                  | 0.64                    | -0.56                  | -3.76                 |
| 6,775.00              | 4.52            | 31.65       | 6,766.03              | 99.13        | 249.11       | -74.48                  | 0.12                    | -0.12                  | -0.20                 |
| 6,800.00              | 4.80            | 34.04       | 6,790.95              | 100.83       | 250.21       | -76.07                  | 1.36                    | 1.12                   | 9.56                  |





## Survey Report



|           |                             |                              |                                |
|-----------|-----------------------------|------------------------------|--------------------------------|
| Company:  | COG Operating LLC           | Local Co-ordinate Reference: | Well 602H                      |
| Project:  | Eddy County, NM (NAD27 NME) | TVD Reference:               | RKB @ 3147.50usft (Ensign 155) |
| Site:     | Quien Sabe Fed Com          | MD Reference:                | RKB @ 3147.50usft (Ensign 155) |
| Well:     | 602H                        | North Reference:             | Grid                           |
| Wellbore: | OH \ 65011                  | Survey Calculation Method:   | Minimum Curvature              |
| Design:   | Surveys (Ensign 155)        | Database:                    | USA Compass                    |

| 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) |  |
| 6,825.00              | 5.25            | 37.04       | 6,815.85              | 102.61       | 251.48       | -77.72                  | 2.08                    | 1.80                   | 12.00                 |  |
| 6,850.00              | 5.18            | 38.12       | 6,840.75              | 104.41       | 252.87       | -79.38                  | 0.48                    | -0.28                  | 4.32                  |  |
| 6,875.00              | 5.45            | 39.81       | 6,865.64              | 106.21       | 254.33       | -81.03                  | 1.25                    | 1.08                   | 6.76                  |  |
| 6,900.00              | 5.77            | 42.06       | 6,890.52              | 108.06       | 255.93       | -82.71                  | 1.55                    | 1.28                   | 9.00                  |  |
| 6,925.00              | 5.84            | 42.73       | 6,915.39              | 109.93       | 257.63       | -84.40                  | 0.39                    | 0.28                   | 2.68                  |  |
| 6,950.00              | 6.16            | 41.64       | 6,940.25              | 111.86       | 259.39       | -86.16                  | 1.36                    | 1.28                   | -4.36                 |  |
| 6,975.00              | 5.97            | 43.43       | 6,965.12              | 113.81       | 261.17       | -87.92                  | 1.07                    | -0.76                  | 7.16                  |  |
| 7,000.00              | 5.62            | 43.66       | 6,989.99              | 115.64       | 262.91       | -89.58                  | 1.40                    | -1.40                  | 0.92                  |  |
| 7,025.00              | 5.28            | 45.18       | 7,014.87              | 117.34       | 264.57       | -91.10                  | 1.48                    | -1.36                  | 6.08                  |  |
| 7,050.00              | 4.96            | 45.36       | 7,039.77              | 118.91       | 266.16       | -92.51                  | 1.28                    | -1.28                  | 0.72                  |  |
| 7,075.00              | 4.85            | 46.00       | 7,064.68              | 120.40       | 267.69       | -93.85                  | 0.49                    | -0.44                  | 2.56                  |  |
| 7,100.00              | 4.84            | 46.36       | 7,089.59              | 121.86       | 269.21       | -95.16                  | 0.13                    | -0.04                  | 1.44                  |  |
| 7,125.00              | 4.60            | 47.74       | 7,114.51              | 123.26       | 270.72       | -96.41                  | 1.06                    | -0.96                  | 5.52                  |  |
| 7,150.00              | 4.37            | 49.11       | 7,139.43              | 124.56       | 272.18       | -97.56                  | 1.01                    | -0.92                  | 5.48                  |  |
| 7,175.00              | 4.25            | 50.15       | 7,164.36              | 125.78       | 273.61       | -98.63                  | 0.57                    | -0.48                  | 4.16                  |  |
| 7,200.00              | 4.20            | 52.10       | 7,189.29              | 126.94       | 275.04       | -99.64                  | 0.61                    | -0.20                  | 7.80                  |  |
| 7,225.00              | 3.98            | 54.15       | 7,214.23              | 128.01       | 276.47       | -100.57                 | 1.06                    | -0.88                  | 8.20                  |  |
| 7,250.00              | 3.90            | 57.92       | 7,239.17              | 128.97       | 277.89       | -101.38                 | 1.08                    | -0.32                  | 15.08                 |  |
| 7,275.00              | 3.84            | 59.25       | 7,264.11              | 129.84       | 279.33       | -102.12                 | 0.43                    | -0.24                  | 5.32                  |  |
| 7,300.00              | 3.73            | 64.93       | 7,289.06              | 130.62       | 280.79       | -102.75                 | 1.56                    | -0.44                  | 22.72                 |  |
| 7,325.00              | 3.69            | 67.68       | 7,314.01              | 131.27       | 282.27       | -103.25                 | 0.73                    | -0.16                  | 11.00                 |  |
| 7,350.00              | 3.75            | 69.34       | 7,338.95              | 131.86       | 283.78       | -103.69                 | 0.49                    | 0.24                   | 6.64                  |  |
| 7,375.00              | 4.05            | 74.82       | 7,363.90              | 132.38       | 285.39       | -104.06                 | 1.91                    | 1.20                   | 21.92                 |  |
| 7,400.00              | 4.27            | 77.67       | 7,388.83              | 132.81       | 287.16       | -104.31                 | 1.21                    | 0.88                   | 11.40                 |  |
| 7,425.00              | 4.57            | 79.91       | 7,413.76              | 133.18       | 289.05       | -104.50                 | 1.38                    | 1.20                   | 8.96                  |  |
| 7,450.00              | 4.81            | 82.30       | 7,438.67              | 133.50       | 291.06       | -104.62                 | 1.24                    | 0.96                   | 9.56                  |  |
| 7,475.00              | 5.09            | 83.44       | 7,463.58              | 133.77       | 293.20       | -104.68                 | 1.19                    | 1.12                   | 4.56                  |  |
| 7,500.00              | 5.18            | 84.19       | 7,488.48              | 134.01       | 295.43       | -104.70                 | 0.45                    | 0.36                   | 3.00                  |  |
| 7,525.00              | 5.23            | 84.21       | 7,513.38              | 134.24       | 297.69       | -104.71                 | 0.20                    | 0.20                   | 0.08                  |  |
| 7,550.00              | 5.28            | 85.04       | 7,538.27              | 134.45       | 299.97       | -104.70                 | 0.36                    | 0.20                   | 3.32                  |  |
| 7,575.00              | 4.96            | 86.77       | 7,563.17              | 134.61       | 302.19       | -104.64                 | 1.42                    | -1.28                  | 6.92                  |  |
| 7,600.00              | 4.91            | 88.84       | 7,588.08              | 134.69       | 304.34       | -104.52                 | 0.74                    | -0.20                  | 8.28                  |  |
| 7,625.00              | 4.95            | 88.97       | 7,612.99              | 134.73       | 306.49       | -104.35                 | 0.17                    | 0.16                   | 0.52                  |  |
| 7,650.00              | 5.00            | 88.74       | 7,637.89              | 134.78       | 308.65       | -104.18                 | 0.22                    | 0.20                   | -0.92                 |  |
| 7,675.00              | 5.07            | 87.34       | 7,662.80              | 134.85       | 310.85       | -104.05                 | 0.57                    | 0.28                   | -5.60                 |  |
| 7,700.00              | 5.04            | 85.59       | 7,687.70              | 134.99       | 313.05       | -103.97                 | 0.63                    | -0.12                  | -7.00                 |  |
| 7,725.00              | 4.95            | 81.18       | 7,712.60              | 135.24       | 315.21       | -104.01                 | 1.58                    | -0.36                  | -17.64                |  |
| 7,750.00              | 4.90            | 77.28       | 7,737.51              | 135.64       | 317.31       | -104.20                 | 1.35                    | -0.20                  | -15.60                |  |
| 7,775.00              | 4.96            | 74.92       | 7,762.42              | 136.16       | 319.40       | -104.51                 | 0.85                    | 0.24                   | -9.44                 |  |
| 7,800.00              | 5.09            | 73.86       | 7,787.32              | 136.75       | 321.51       | -104.89                 | 0.64                    | 0.52                   | -4.24                 |  |
| 7,825.00              | 5.05            | 73.34       | 7,812.22              | 137.37       | 323.63       | -105.31                 | 0.24                    | -0.16                  | -2.08                 |  |
| 7,850.00              | 4.92            | 72.98       | 7,837.13              | 138.00       | 325.71       | -105.73                 | 0.53                    | -0.52                  | -1.44                 |  |
| 7,875.00              | 4.49            | 71.74       | 7,862.05              | 138.62       | 327.66       | -106.16                 | 1.77                    | -1.72                  | -4.96                 |  |

|                  |                             |                                     |                                |
|------------------|-----------------------------|-------------------------------------|--------------------------------|
| <b>Company:</b>  | COG Operating LLC           | <b>Local Co-ordinate Reference:</b> | Well 602H                      |
| <b>Project:</b>  | Eddy County, NM (NAD27 NME) | <b>TVD Reference:</b>               | RKB @ 3147.50usft (Ensign 155) |
| <b>Site:</b>     | Quien Sabe Fed Com          | <b>MD Reference:</b>                | RKB @ 3147.50usft (Ensign 155) |
| <b>Well:</b>     | 602H                        | <b>North Reference:</b>             | Grid                           |
| <b>Wellbore:</b> | OH \ 65011                  | <b>Survey Calculation Method:</b>   | Minimum Curvature              |
| <b>Design:</b>   | Surveys (Ensign 155)        | <b>Database:</b>                    | USA Compass                    |

| 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) |  |
| 7,900.00                        | 4.03            | 69.71       | 7,886.98              | 139.23       | 329.41       | -106.60                 | 1.94                    | -1.84                  | -8.12                 |  |
| 7,925.00                        | 3.56            | 68.10       | 7,911.92              | 139.82       | 330.96       | -107.04                 | 1.93                    | -1.88                  | -6.44                 |  |
| 7,950.00                        | 3.09            | 63.74       | 7,936.88              | 140.41       | 332.28       | -107.50                 | 2.13                    | -1.88                  | -17.44                |  |
| 7,975.00                        | 2.87            | 61.47       | 7,961.85              | 141.01       | 333.44       | -107.98                 | 1.00                    | -0.88                  | -9.08                 |  |
| 8,000.00                        | 2.84            | 60.88       | 7,986.81              | 141.61       | 334.53       | -108.47                 | 0.17                    | -0.12                  | -2.36                 |  |
| 8,025.00                        | 2.80            | 60.58       | 8,011.78              | 142.21       | 335.60       | -108.96                 | 0.17                    | -0.16                  | -1.20                 |  |
| 8,050.00                        | 2.92            | 58.57       | 8,036.75              | 142.84       | 336.68       | -109.49                 | 0.63                    | 0.48                   | -8.04                 |  |
| 8,075.00                        | 3.14            | 59.83       | 8,061.72              | 143.52       | 337.81       | -110.05                 | 0.92                    | 0.88                   | 5.04                  |  |
| 8,100.00                        | 3.29            | 58.86       | 8,086.68              | 144.23       | 339.02       | -110.65                 | 0.64                    | 0.60                   | -3.88                 |  |
| 8,125.00                        | 3.42            | 57.63       | 8,111.64              | 145.00       | 340.26       | -111.29                 | 0.59                    | 0.52                   | -4.92                 |  |
| 8,150.00                        | 3.65            | 56.90       | 8,136.59              | 145.84       | 341.56       | -112.00                 | 0.94                    | 0.92                   | -2.92                 |  |
| 8,175.00                        | 3.90            | 59.92       | 8,161.53              | 146.70       | 342.96       | -112.72                 | 1.28                    | 1.00                   | 12.08                 |  |
| 8,200.00                        | 4.24            | 61.46       | 8,186.47              | 147.57       | 344.51       | -113.43                 | 1.43                    | 1.36                   | 6.16                  |  |
| 8,225.00                        | 4.52            | 62.21       | 8,211.40              | 148.47       | 346.19       | -114.16                 | 1.14                    | 1.12                   | 3.00                  |  |
| 8,250.00                        | 4.73            | 62.82       | 8,236.32              | 149.40       | 347.98       | -114.92                 | 0.86                    | 0.84                   | 2.44                  |  |
| 8,275.00                        | 4.84            | 63.26       | 8,261.23              | 150.34       | 349.84       | -115.68                 | 0.46                    | 0.44                   | 1.76                  |  |
| 8,300.00                        | 4.70            | 63.14       | 8,286.14              | 151.28       | 351.69       | -116.43                 | 0.56                    | -0.56                  | -0.48                 |  |
| 8,325.00                        | 4.42            | 60.51       | 8,311.06              | 152.22       | 353.45       | -117.19                 | 1.40                    | -1.12                  | -10.52                |  |
| 8,350.00                        | 4.31            | 56.93       | 8,335.99              | 153.20       | 355.07       | -118.02                 | 1.18                    | -0.44                  | -14.32                |  |
| 8,375.00                        | 4.16            | 55.56       | 8,360.92              | 154.23       | 356.61       | -118.89                 | 0.72                    | -0.60                  | -5.48                 |  |
| 8,400.00                        | 4.01            | 49.35       | 8,385.86              | 155.31       | 358.02       | -119.83                 | 1.87                    | -0.60                  | -24.84                |  |
| 8,425.00                        | 3.97            | 47.98       | 8,410.80              | 156.46       | 359.32       | -120.84                 | 0.41                    | -0.16                  | -5.48                 |  |
| 8,450.00                        | 4.17            | 47.15       | 8,435.74              | 157.66       | 360.63       | -121.91                 | 0.83                    | 0.80                   | -3.32                 |  |
| 8,475.00                        | 4.27            | 46.30       | 8,460.67              | 158.92       | 361.97       | -123.03                 | 0.47                    | 0.40                   | -3.40                 |  |
| 8,500.00                        | 4.44            | 47.39       | 8,485.60              | 160.22       | 363.36       | -124.19                 | 0.76                    | 0.68                   | 4.36                  |  |
| 8,500.52                        | 4.45            | 47.41       | 8,486.11              | 160.24       | 363.39       | -124.22                 | 1.95                    | 1.92                   | 3.85                  |  |
| <b>Tie In</b>                   |                 |             |                       |              |              |                         |                         |                        |                       |  |
| 8,636.00                        | 3.91            | 48.38       | 8,621.23              | 166.87       | 370.71       | -130.10                 | 0.40                    | -0.40                  | 0.72                  |  |
| <b>First Phoenix MWD Survey</b> |                 |             |                       |              |              |                         |                         |                        |                       |  |
| 8,676.00                        | 3.75            | 48.72       | 8,661.14              | 168.64       | 372.71       | -131.66                 | 0.40                    | -0.40                  | 0.85                  |  |
| 8,707.00                        | 6.10            | 80.50       | 8,692.03              | 169.58       | 375.10       | -132.37                 | 11.34                   | 7.58                   | 102.52                |  |
| 8,738.00                        | 10.00           | 95.60       | 8,722.73              | 169.59       | 379.40       | -131.96                 | 14.21                   | 12.58                  | 48.71                 |  |
| 8,769.00                        | 14.50           | 99.99       | 8,753.01              | 168.65       | 385.91       | -130.40                 | 14.81                   | 14.52                  | 14.16                 |  |
| 8,800.00                        | 19.70           | 102.25      | 8,782.63              | 166.87       | 394.84       | -127.76                 | 16.91                   | 16.77                  | 7.29                  |  |
| 8,832.00                        | 23.75           | 108.09      | 8,812.36              | 163.72       | 406.24       | -123.52                 | 14.33                   | 12.66                  | 18.25                 |  |
| 8,864.00                        | 26.66           | 116.13      | 8,841.32              | 158.56       | 418.82       | -117.15                 | 14.02                   | 9.09                   | 25.13                 |  |
| 8,895.00                        | 29.48           | 124.56      | 8,868.68              | 151.16       | 431.36       | -108.58                 | 15.68                   | 9.10                   | 27.19                 |  |
| 8,927.00                        | 32.46           | 131.47      | 8,896.12              | 141.00       | 444.28       | -97.21                  | 14.49                   | 9.31                   | 21.59                 |  |
| 8,958.00                        | 35.33           | 138.12      | 8,921.86              | 128.81       | 456.51       | -83.89                  | 15.12                   | 9.26                   | 21.45                 |  |
| 8,989.00                        | 38.22           | 144.83      | 8,946.70              | 114.29       | 468.02       | -68.32                  | 15.95                   | 9.32                   | 21.65                 |  |
| 9,020.00                        | 39.78           | 150.72      | 8,970.80              | 97.79        | 478.40       | -50.90                  | 12.97                   | 5.03                   | 19.00                 |  |
| 9,052.00                        | 40.27           | 151.40      | 8,995.30              | 79.78        | 488.36       | -32.01                  | 2.05                    | 1.53                   | 2.13                  |  |
| 9,083.00                        | 42.04           | 150.23      | 9,018.64              | 61.98        | 498.31       | -13.32                  | 6.23                    | 5.71                   | -3.77                 |  |
| 9,114.00                        | 43.63           | 150.26      | 9,041.37              | 43.68        | 508.77       | 5.91                    | 5.13                    | 5.13                   | 0.10                  |  |



## Survey Report



|           |                             |                              |                                |
|-----------|-----------------------------|------------------------------|--------------------------------|
| Company:  | COG Operating LLC           | Local Co-ordinate Reference: | Well 602H                      |
| Project:  | Eddy County, NM (NAD27 NME) | TVD Reference:               | RKB @ 3147.50usft (Ensign 155) |
| Site:     | Quien Sabe Fed Com          | MD Reference:                | RKB @ 3147.50usft (Ensign 155) |
| Well:     | 602H                        | North Reference:             | Grid                           |
| Wellbore: | OH \ 65011                  | Survey Calculation Method:   | Minimum Curvature              |
| Design:   | Surveys (Ensign 155)        | Database:                    | USA Compass                    |

| 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) |  |
| 9,146.00              | 45.86           | 151.02      | 9,064.10              | 24.05        | 519.81       | 26.52                   | 7.17                    | 6.97                   | 2.38                  |  |
| 9,177.00              | 48.34           | 152.69      | 9,085.20              | 4.02         | 530.51       | 47.49                   | 8.92                    | 8.00                   | 5.39                  |  |
| 9,209.00              | 50.09           | 154.16      | 9,106.10              | -17.65       | 541.35       | 70.11                   | 6.48                    | 5.47                   | 4.59                  |  |
| 9,240.00              | 51.88           | 154.87      | 9,125.62              | -39.39       | 551.71       | 92.75                   | 6.04                    | 5.77                   | 2.29                  |  |
| 9,271.00              | 54.02           | 155.62      | 9,144.30              | -61.86       | 562.07       | 116.12                  | 7.17                    | 6.90                   | 2.42                  |  |
| 9,302.00              | 56.88           | 156.12      | 9,161.87              | -85.16       | 572.50       | 140.32                  | 9.32                    | 9.23                   | 1.61                  |  |
| 9,334.00              | 59.77           | 156.49      | 9,178.68              | -110.09      | 583.44       | 166.20                  | 9.08                    | 9.03                   | 1.16                  |  |
| 9,365.00              | 62.65           | 157.07      | 9,193.60              | -135.06      | 594.15       | 192.09                  | 9.43                    | 9.29                   | 1.87                  |  |
| 9,396.00              | 64.88           | 157.66      | 9,207.31              | -160.72      | 604.85       | 218.67                  | 7.39                    | 7.19                   | 1.90                  |  |
| 9,428.00              | 67.10           | 157.90      | 9,220.33              | -187.78      | 615.90       | 246.67                  | 6.97                    | 6.94                   | 0.75                  |  |
| 9,459.00              | 69.76           | 158.12      | 9,231.72              | -214.51      | 626.70       | 274.32                  | 8.61                    | 8.58                   | 0.71                  |  |
| 9,489.00              | 71.96           | 158.89      | 9,241.56              | -240.88      | 637.08       | 301.58                  | 7.72                    | 7.33                   | 2.57                  |  |
| 9,521.00              | 74.29           | 159.13      | 9,250.85              | -269.47      | 648.05       | 331.09                  | 7.32                    | 7.28                   | 0.75                  |  |
| 9,552.00              | 76.58           | 159.57      | 9,258.64              | -297.54      | 658.63       | 360.06                  | 7.51                    | 7.39                   | 1.42                  |  |
| 9,583.00              | 79.91           | 160.51      | 9,264.96              | -326.06      | 668.98       | 389.46                  | 11.14                   | 10.74                  | 3.03                  |  |
| 9,614.00              | 82.49           | 161.26      | 9,269.70              | -355.01      | 679.02       | 419.24                  | 8.66                    | 8.32                   | 2.42                  |  |
| 9,646.00              | 84.73           | 161.09      | 9,273.26              | -385.11      | 689.28       | 450.19                  | 7.02                    | 7.00                   | -0.53                 |  |
| 9,708.00              | 89.75           | 161.50      | 9,276.25              | -443.74      | 709.13       | 510.48                  | 8.12                    | 8.10                   | 0.66                  |  |
| 9,802.00              | 90.81           | 160.34      | 9,275.79              | -532.58      | 739.86       | 601.87                  | 1.67                    | 1.13                   | -1.23                 |  |
| 9,897.00              | 91.72           | 159.07      | 9,273.69              | -621.65      | 772.80       | 693.73                  | 1.64                    | 0.96                   | -1.34                 |  |
| 9,990.00              | 88.48           | 159.66      | 9,273.53              | -708.68      | 805.57       | 783.52                  | 3.54                    | -3.48                  | 0.63                  |  |
| 10,084.00             | 88.76           | 161.52      | 9,275.79              | -797.30      | 836.80       | 874.76                  | 2.00                    | 0.30                   | 1.98                  |  |
| 10,177.00             | 89.79           | 165.38      | 9,276.97              | -886.43      | 863.28       | 966.03                  | 4.30                    | 1.11                   | 4.15                  |  |
| 10,272.00             | 90.46           | 167.96      | 9,276.76              | -978.86      | 885.18       | 1,060.15                | 2.81                    | 0.71                   | 2.72                  |  |
| 10,366.00             | 90.36           | 170.41      | 9,276.09              | -1,071.18    | 902.82       | 1,153.75                | 2.61                    | -0.11                  | 2.61                  |  |
| 10,460.00             | 89.68           | 174.70      | 9,276.05              | -1,164.36    | 914.99       | 1,247.68                | 4.62                    | -0.72                  | 4.56                  |  |
| 10,555.00             | 89.48           | 176.07      | 9,276.75              | -1,259.05    | 922.64       | 1,342.66                | 1.46                    | -0.21                  | 1.44                  |  |
| 10,649.00             | 89.86           | 177.39      | 9,277.29              | -1,352.89    | 928.00       | 1,436.58                | 1.46                    | 0.40                   | 1.40                  |  |
| 10,743.00             | 90.30           | 178.64      | 9,277.16              | -1,446.84    | 931.25       | 1,530.39                | 1.41                    | 0.47                   | 1.33                  |  |
| 10,840.00             | 90.47           | 177.13      | 9,276.51              | -1,543.76    | 934.83       | 1,627.21                | 1.57                    | 0.18                   | -1.56                 |  |
| 10,933.00             | 89.36           | 176.87      | 9,276.65              | -1,636.63    | 939.70       | 1,720.12                | 1.23                    | -1.19                  | -0.28                 |  |
| 11,026.00             | 89.42           | 176.88      | 9,277.64              | -1,729.49    | 944.77       | 1,813.03                | 0.07                    | 0.06                   | 0.01                  |  |
| 11,121.00             | 89.48           | 179.89      | 9,278.55              | -1,824.44    | 947.45       | 1,907.78                | 3.17                    | 0.06                   | 3.17                  |  |
| 11,215.00             | 88.68           | 180.27      | 9,280.06              | -1,918.43    | 947.32       | 2,001.32                | 0.94                    | -0.85                  | 0.40                  |  |
| 11,310.00             | 91.67           | 185.00      | 9,279.77              | -2,013.29    | 942.95       | 2,095.31                | 5.89                    | 3.15                   | 4.98                  |  |
| 11,404.00             | 89.45           | 185.01      | 9,278.85              | -2,106.92    | 934.75       | 2,187.70                | 2.36                    | -2.36                  | 0.01                  |  |
| 11,498.00             | 88.45           | 184.73      | 9,280.57              | -2,200.56    | 926.77       | 2,280.13                | 1.10                    | -1.06                  | -0.30                 |  |
| 11,592.00             | 86.66           | 179.91      | 9,284.58              | -2,294.37    | 922.97       | 2,373.12                | 5.47                    | -1.90                  | -5.13                 |  |
| 11,686.00             | 87.28           | 178.60      | 9,289.55              | -2,388.23    | 924.19       | 2,466.65                | 1.54                    | 0.66                   | -1.39                 |  |
| 11,780.00             | 88.70           | 177.19      | 9,292.85              | -2,482.10    | 927.64       | 2,560.42                | 2.13                    | 1.51                   | -1.50                 |  |
| 11,874.00             | 89.20           | 178.13      | 9,294.57              | -2,576.00    | 931.48       | 2,654.25                | 1.13                    | 0.53                   | 1.00                  |  |
| 11,969.00             | 89.97           | 177.99      | 9,295.26              | -2,670.95    | 934.69       | 2,749.06                | 0.82                    | 0.81                   | -0.15                 |  |
| 12,063.00             | 90.34           | 179.28      | 9,295.01              | -2,764.92    | 936.93       | 2,842.80                | 1.43                    | 0.39                   | 1.37                  |  |



## Survey Report



|           |                             |                              |                                |
|-----------|-----------------------------|------------------------------|--------------------------------|
| Company:  | COG Operating LLC           | Local Co-ordinate Reference: | Well 602H                      |
| Project:  | Eddy County, NM (NAD27 NME) | TVD Reference:               | RKB @ 3147.50usft (Ensign 155) |
| Site:     | Quien Sabe Fed Com          | MD Reference:                | RKB @ 3147.50usft (Ensign 155) |
| Well:     | 602H                        | North Reference:             | Grid                           |
| Wellbore: | OH \ 65011                  | Survey Calculation Method:   | Minimum Curvature              |
| Design:   | Surveys (Ensign 155)        | Database:                    | USA Compass                    |

| 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) |
| 12,157.00             | 89.22           | 178.44      | 9,295.37              | -2,858.90    | 938.80       | 2,936.52                | 1.49                    | -1.19                  | -0.89                 |
| 12,252.00             | 90.39           | 178.94      | 9,295.69              | -2,953.87    | 940.97       | 3,031.25                | 1.34                    | 1.23                   | 0.53                  |
| 12,346.00             | 88.62           | 177.28      | 9,296.50              | -3,047.81    | 944.07       | 3,125.05                | 2.58                    | -1.88                  | -1.77                 |
| 12,439.00             | 89.74           | 177.94      | 9,297.83              | -3,140.71    | 947.95       | 3,217.89                | 1.40                    | 1.20                   | 0.71                  |
| 12,533.00             | 88.19           | 177.51      | 9,299.53              | -3,234.62    | 951.68       | 3,311.72                | 1.71                    | -1.65                  | -0.46                 |
| 12,627.00             | 88.25           | 177.28      | 9,302.45              | -3,328.48    | 955.95       | 3,405.55                | 0.25                    | 0.06                   | -0.24                 |
| 12,721.00             | 91.10           | 180.60      | 9,302.99              | -3,422.44    | 957.69       | 3,499.23                | 4.65                    | 3.03                   | 3.53                  |
| 12,815.00             | 88.06           | 177.88      | 9,303.67              | -3,516.41    | 958.94       | 3,592.88                | 4.34                    | -3.23                  | -2.89                 |
| 12,909.00             | 89.82           | 180.40      | 9,305.41              | -3,610.37    | 960.35       | 3,686.54                | 3.27                    | 1.87                   | 2.68                  |
| 13,003.00             | 89.83           | 180.32      | 9,305.70              | -3,704.37    | 959.76       | 3,780.03                | 0.09                    | 0.01                   | -0.09                 |
| 13,099.00             | 89.83           | 180.20      | 9,305.99              | -3,800.37    | 959.32       | 3,875.54                | 0.12                    | 0.00                   | -0.13                 |
| 13,192.00             | 90.28           | 180.51      | 9,305.90              | -3,893.36    | 958.74       | 3,968.04                | 0.59                    | 0.48                   | 0.33                  |
| 13,287.00             | 89.16           | 179.02      | 9,306.36              | -3,988.36    | 959.13       | 4,062.62                | 1.96                    | -1.18                  | -1.57                 |
| 13,381.00             | 89.96           | 180.48      | 9,307.08              | -4,082.35    | 959.54       | 4,156.21                | 1.77                    | 0.85                   | 1.55                  |
| 13,475.00             | 89.23           | 179.46      | 9,307.75              | -4,176.35    | 959.59       | 4,249.77                | 1.33                    | -0.78                  | -1.09                 |
| 13,569.00             | 89.33           | 179.92      | 9,308.93              | -4,270.34    | 960.10       | 4,343.36                | 0.50                    | 0.11                   | 0.49                  |
| 13,663.00             | 89.22           | 179.52      | 9,310.12              | -4,364.33    | 960.56       | 4,436.96                | 0.44                    | -0.12                  | -0.43                 |
| 13,757.00             | 89.22           | 179.93      | 9,311.40              | -4,458.32    | 961.01       | 4,530.55                | 0.44                    | 0.00                   | 0.44                  |
| 13,851.00             | 90.62           | 182.60      | 9,311.53              | -4,552.29    | 958.94       | 4,623.87                | 3.21                    | 1.49                   | 2.84                  |
| 13,946.00             | 90.08           | 181.72      | 9,310.95              | -4,647.21    | 955.36       | 4,718.00                | 1.09                    | -0.57                  | -0.93                 |
| 14,040.00             | 91.39           | 183.93      | 9,309.74              | -4,741.08    | 950.73       | 4,810.98                | 2.73                    | 1.39                   | 2.35                  |
| 14,134.00             | 90.02           | 184.27      | 9,308.59              | -4,834.83    | 944.01       | 4,903.63                | 1.50                    | -1.46                  | 0.36                  |
| 14,228.00             | 89.20           | 182.65      | 9,309.23              | -4,928.66    | 938.33       | 4,996.46                | 1.93                    | -0.87                  | -1.72                 |
| 14,322.00             | 89.22           | 180.56      | 9,310.52              | -5,022.61    | 935.70       | 5,089.71                | 2.22                    | 0.02                   | -2.22                 |
| 14,416.00             | 89.76           | 179.88      | 9,311.36              | -5,116.60    | 935.34       | 5,183.23                | 0.92                    | 0.57                   | -0.72                 |
| 14,510.00             | 90.22           | 180.83      | 9,311.37              | -5,210.60    | 934.76       | 5,276.72                | 1.12                    | 0.49                   | 1.01                  |
| 14,604.00             | 90.28           | 181.09      | 9,310.96              | -5,304.58    | 933.18       | 5,370.11                | 0.28                    | 0.06                   | 0.28                  |
| 14,698.00             | 90.22           | 181.12      | 9,310.55              | -5,398.57    | 931.37       | 5,463.48                | 0.07                    | -0.06                  | 0.03                  |
| 14,793.00             | 90.22           | 180.47      | 9,310.19              | -5,493.55    | 930.05       | 5,557.89                | 0.68                    | 0.00                   | -0.68                 |
| 14,887.00             | 89.57           | 179.71      | 9,310.36              | -5,587.55    | 929.90       | 5,651.43                | 1.06                    | -0.69                  | -0.81                 |
| 14,981.00             | 89.82           | 179.34      | 9,310.86              | -5,681.55    | 930.68       | 5,745.06                | 0.48                    | 0.27                   | -0.39                 |
| 15,074.00             | 90.19           | 180.54      | 9,310.85              | -5,774.55    | 930.78       | 5,837.62                | 1.35                    | 0.40                   | 1.29                  |
| 15,169.00             | 90.16           | 180.15      | 9,310.56              | -5,869.54    | 930.21       | 5,932.12                | 0.41                    | -0.03                  | -0.41                 |
| 15,263.00             | 89.94           | 179.67      | 9,310.48              | -5,963.54    | 930.36       | 6,025.69                | 0.56                    | -0.23                  | -0.51                 |
| 15,359.00             | 90.14           | 180.43      | 9,310.41              | -6,059.54    | 930.27       | 6,121.23                | 0.82                    | 0.21                   | 0.79                  |
| 15,452.00             | 88.60           | 178.93      | 9,311.44              | -6,152.53    | 930.79       | 6,213.82                | 2.31                    | -1.66                  | -1.61                 |
| 15,546.00             | 89.08           | 179.14      | 9,313.34              | -6,246.50    | 932.37       | 6,307.50                | 0.56                    | 0.51                   | 0.22                  |
| 15,640.00             | 87.49           | 178.11      | 9,316.15              | -6,340.42    | 934.63       | 6,401.20                | 2.02                    | -1.69                  | -1.10                 |
| 15,734.00             | 89.53           | 179.57      | 9,318.60              | -6,434.37    | 936.53       | 6,494.89                | 2.67                    | 2.17                   | 1.55                  |
| 15,829.00             | 90.39           | 180.83      | 9,318.66              | -6,529.36    | 936.20       | 6,589.40                | 1.61                    | 0.91                   | 1.33                  |
| 15,922.00             | 89.60           | 179.43      | 9,318.67              | -6,622.36    | 935.99       | 6,681.94                | 1.73                    | -0.85                  | -1.51                 |
| 16,017.00             | 90.13           | 179.66      | 9,318.90              | -6,717.36    | 936.74       | 6,776.56                | 0.61                    | 0.56                   | 0.24                  |
| 16,111.00             | 90.11           | 180.37      | 9,318.70              | -6,811.35    | 936.72       | 6,870.11                | 0.76                    | -0.02                  | 0.76                  |



## Survey Report



|                  |                             |                                     |                                |
|------------------|-----------------------------|-------------------------------------|--------------------------------|
| <b>Company:</b>  | COG Operating LLC           | <b>Local Co-ordinate Reference:</b> | Well 602H                      |
| <b>Project:</b>  | Eddy County, NM (NAD27 NME) | <b>TVD Reference:</b>               | RKB @ 3147.50usft (Ensign 155) |
| <b>Site:</b>     | Quien Sabe Fed Com          | <b>MD Reference:</b>                | RKB @ 3147.50usft (Ensign 155) |
| <b>Well:</b>     | 602H                        | <b>North Reference:</b>             | Grid                           |
| <b>Wellbore:</b> | OH \ 65011                  | <b>Survey Calculation Method:</b>   | Minimum Curvature              |
| <b>Design:</b>   | Surveys (Ensign 155)        | <b>Database:</b>                    | USA Compass                    |

| 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) |  |
| 16,204.00                | 92.16           | 181.76      | 9,316.86              | -6,904.31    | 934.99       | 6,962.46                | 2.66                    | 2.20                   | 1.49                  |  |
| 16,298.00                | 92.93           | 181.88      | 9,312.68              | -6,998.17    | 932.01       | 7,055.59                | 0.83                    | 0.82                   | 0.13                  |  |
| 16,392.00                | 89.93           | 178.98      | 9,310.34              | -7,092.12    | 931.30       | 7,149.03                | 4.44                    | -3.19                  | -3.09                 |  |
| 16,486.00                | 90.54           | 180.46      | 9,309.95              | -7,186.11    | 931.76       | 7,242.62                | 1.70                    | 0.65                   | 1.57                  |  |
| 16,580.00                | 90.34           | 179.95      | 9,309.23              | -7,280.11    | 931.43       | 7,336.14                | 0.58                    | -0.21                  | -0.54                 |  |
| 16,675.00                | 90.25           | 179.78      | 9,308.74              | -7,375.11    | 931.65       | 7,430.71                | 0.20                    | -0.09                  | -0.18                 |  |
| 16,768.00                | 89.82           | 179.40      | 9,308.68              | -7,468.11    | 932.32       | 7,523.34                | 0.62                    | -0.46                  | -0.41                 |  |
| 16,863.00                | 89.43           | 175.88      | 9,309.31              | -7,563.01    | 936.23       | 7,618.17                | 3.73                    | -0.41                  | -3.71                 |  |
| 16,957.00                | 89.30           | 175.31      | 9,310.35              | -7,656.72    | 943.45       | 7,712.15                | 0.62                    | -0.14                  | -0.61                 |  |
| 17,051.00                | 89.25           | 175.58      | 9,311.54              | -7,750.42    | 950.91       | 7,806.12                | 0.29                    | -0.05                  | 0.29                  |  |
| 17,145.00                | 89.23           | 177.09      | 9,312.78              | -7,844.22    | 956.92       | 7,900.06                | 1.61                    | -0.02                  | 1.61                  |  |
| 17,239.00                | 89.23           | 178.74      | 9,314.05              | -7,938.14    | 960.34       | 7,993.87                | 1.76                    | 0.00                   | 1.76                  |  |
| 17,333.00                | 89.20           | 180.25      | 9,315.34              | -8,032.13    | 961.17       | 8,087.50                | 1.61                    | -0.03                  | 1.61                  |  |
| 17,427.00                | 89.25           | 180.02      | 9,316.61              | -8,126.12    | 960.94       | 8,181.02                | 0.25                    | 0.05                   | -0.24                 |  |
| 17,520.00                | 90.16           | 182.64      | 9,317.09              | -8,219.08    | 958.79       | 8,273.34                | 2.98                    | 0.98                   | 2.82                  |  |
| 17,615.00                | 89.68           | 180.46      | 9,317.22              | -8,314.04    | 956.22       | 8,367.60                | 2.35                    | -0.51                  | -2.29                 |  |
| 17,709.00                | 94.16           | 184.31      | 9,314.07              | -8,407.87    | 952.31       | 8,460.60                | 6.28                    | 4.77                   | 4.10                  |  |
| 17,803.00                | 90.82           | 182.10      | 9,309.98              | -8,501.61    | 947.07       | 8,553.39                | 4.26                    | -3.55                  | -2.35                 |  |
| 17,898.00                | 88.40           | 181.46      | 9,310.63              | -8,596.56    | 944.12       | 8,647.60                | 2.63                    | -2.55                  | -0.67                 |  |
| 17,990.00                | 88.08           | 183.18      | 9,313.46              | -8,688.43    | 940.39       | 8,738.69                | 1.90                    | -0.35                  | 1.87                  |  |
| 18,084.00                | 88.26           | 183.82      | 9,316.46              | -8,782.21    | 934.66       | 8,831.46                | 0.71                    | 0.19                   | 0.68                  |  |
| 18,178.00                | 88.50           | 184.90      | 9,319.12              | -8,875.90    | 927.51       | 8,924.02                | 1.18                    | 0.26                   | 1.15                  |  |
| 18,273.00                | 91.11           | 187.80      | 9,319.44              | -8,970.30    | 917.01       | 9,016.95                | 4.11                    | 2.75                   | 3.05                  |  |
| 18,364.00                | 88.99           | 182.90      | 9,319.36              | -9,060.87    | 908.53       | 9,106.27                | 5.87                    | -2.33                  | -5.38                 |  |
| 18,458.00                | 89.40           | 181.45      | 9,320.68              | -9,154.79    | 904.96       | 9,199.40                | 1.60                    | 0.44                   | -1.54                 |  |
| 18,553.00                | 90.74           | 182.29      | 9,320.56              | -9,249.74    | 901.86       | 9,293.60                | 1.66                    | 1.41                   | 0.88                  |  |
| 18,647.00                | 88.19           | 179.08      | 9,321.44              | -9,343.70    | 900.74       | 9,387.01                | 4.36                    | -2.71                  | -3.41                 |  |
| 18,741.00                | 86.03           | 176.98      | 9,326.18              | -9,437.52    | 903.96       | 9,480.70                | 3.20                    | -2.30                  | -2.23                 |  |
| 18,835.00                | 85.13           | 176.31      | 9,333.43              | -9,531.08    | 909.45       | 9,574.35                | 1.19                    | -0.96                  | -0.71                 |  |
| 18,887.00                | 84.91           | 176.04      | 9,337.94              | -9,582.77    | 912.90       | 9,626.13                | 0.67                    | -0.43                  | -0.52                 |  |
| LTP: 18887' MD           |                 |             |                       |              |              |                         |                         |                        |                       |  |
| 18,929.00                | 84.73           | 175.82      | 9,341.73              | -9,624.49    | 915.87       | 9,667.94                | 0.67                    | -0.43                  | -0.52                 |  |
| 18,947.00                | 84.69           | 175.76      | 9,343.39              | -9,642.36    | 917.19       | 9,685.86                | 0.40                    | -0.22                  | -0.33                 |  |
| Final Phoenix MWD Survey |                 |             |                       |              |              |                         |                         |                        |                       |  |
| 19,015.00                | 84.69           | 175.76      | 9,349.69              | -9,709.89    | 922.19       | 9,753.55                | 0.00                    | 0.00                   | 0.00                  |  |
| Projection to TD         |                 |             |                       |              |              |                         |                         |                        |                       |  |



# Survey Report



|                  |                             |                                     |                                |
|------------------|-----------------------------|-------------------------------------|--------------------------------|
| <b>Company:</b>  | COG Operating LLC           | <b>Local Co-ordinate Reference:</b> | Well 602H                      |
| <b>Project:</b>  | Eddy County, NM (NAD27 NME) | <b>TVD Reference:</b>               | RKB @ 3147.50usft (Ensign 155) |
| <b>Site:</b>     | Quien Sabe Fed Com          | <b>MD Reference:</b>                | RKB @ 3147.50usft (Ensign 155) |
| <b>Well:</b>     | 602H                        | <b>North Reference:</b>             | Grid                           |
| <b>Wellbore:</b> | OH \ 65011                  | <b>Survey Calculation Method:</b>   | Minimum Curvature              |
| <b>Design:</b>   | Surveys (Ensign 155)        | <b>Database:</b>                    | USA Compass                    |

## Design Annotations

| Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Local Coordinates |                 | Comment                  |
|-----------------------------|-----------------------------|-------------------|-----------------|--------------------------|
|                             |                             | +N/-S<br>(usft)   | +E/-W<br>(usft) |                          |
| 8,500.52                    | 8,486.11                    | 160.24            | 363.39          | Tie In                   |
| 8,636.00                    | 8,621.23                    | 166.87            | 370.71          | First Phoenix MWD Survey |
| 18,887.00                   | 9,337.94                    | -9,582.77         | 912.90          | LTP: 18887' MD           |
| 18,947.00                   | 9,343.39                    | -9,642.36         | 917.19          | Final Phoenix MWD Survey |
| 19,015.00                   | 9,349.69                    | -9,709.89         | 922.19          | Projection to TD         |