

# **COG OPERATING, LLC**

**LEA COUNTY, NM**

**DEEP BSS**

**BOBWHITE 12 STATE COM #2H**

**Wellbore #1**

**Plan: DWD Plan 1**

## **Standard Planning Report**

**12 May, 2016**

**OCD – HOBBS**

**05/13/2016**

**RECEIVED**

# COG Operating LLC

## Planning Report

|                  |                           |                                     |   |
|------------------|---------------------------|-------------------------------------|---|
| <b>Database:</b> | COG Operating, LLC        | <b>Local Co-ordinate Reference:</b> | Well BOBWHITE 12 STATE COM #2H              |
| <b>Company:</b>  | NEW MEXICO BASIN          | <b>TVD Reference:</b>               | RKB = 3773+20=3793 @ 3793.0usft (PATRIOT 2) |
| <b>Project:</b>  | LEA COUNTY, NM            | <b>MD Reference:</b>                | RKB = 3773+20=3793 @ 3793.0usft (PATRIOT 2) |
| <b>Site:</b>     | DEEP BSS                  | <b>North Reference:</b>             | Grid  |
| <b>Well:</b>     | BOBWHITE 12 STATE COM #2H | <b>Survey Calculation Method:</b>   | Minimum Curvature                           |
| <b>Wellbore:</b> | Wellbore #1               |                                     |   |
| <b>Design:</b>   | DWD Plan 1                |                                     |   |

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

|                              |          |                     |                 |                                     |
|------------------------------|----------|---------------------|-----------------|-------------------------------------|
| <b>Site</b>                  | DEEP BSS |                     |                 |                                     |
| <b>Site Position:</b>        |          | <b>Northing:</b>    | 435,807.90 usft | <b>Latitude:</b> 32° 11' 46.554 N   |
| <b>From:</b>                 | Map      | <b>Easting:</b>     | 713,748.60 usft | <b>Longitude:</b> 103° 38' 32.429 W |
| <b>Position Uncertainty:</b> | 0.0 usft | <b>Slot Radius:</b> | 13-3/16 "       | <b>Grid Convergence:</b> 0.37 °     |

|                             |                           |                            |                  |                                   |
|-----------------------------|---------------------------|----------------------------|------------------|-----------------------------------|
| <b>Well</b>                 | BOBWHITE 12 STATE COM #2H |                            |                  |                                   |
| <b>Well Position</b>        | +N/-S                     | 110,724.5 usft             | <b>Northing:</b> | 546,532.40 usft                   |
|                             | +E/-W                     | 35,933.5 usft              | <b>Easting:</b>  | 749,682.10 usft                   |
| <b>Position Uncertainty</b> | 3.0 usft                  | <b>Wellhead Elevation:</b> | 0.0 usft         | <b>Ground Level:</b> 3,773.0 usft |

|                  |                   |                    |                        |                      |                            |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| <b>Wellbore</b>  | Wellbore #1       |                    |                        |                      |                            |
| <b>Magnetics</b> | <b>Model Name</b> | <b>Sample Date</b> | <b>Declination (°)</b> | <b>Dip Angle (°)</b> | <b>Field Strength (nT)</b> |
|                  | WMM2015           | 5/12/2016          | 7.08                   | 60.33                | 48,210                     |

|                          |                                |                     |                      |                      |
|--------------------------|--------------------------------|---------------------|----------------------|----------------------|
| <b>Design</b>            | DWD Plan 1                     |                     |                      |                      |
| <b>Audit Notes:</b>      |                                |                     |                      |                      |
| <b>Version:</b>          | <b>Phase:</b>                  | PROTOTYPE           | <b>Tie On Depth:</b> | 0.0                  |
| <b>Vertical Section:</b> | <b>Depth From (TVD) (usft)</b> | <b>+N/-S (usft)</b> | <b>+E/-W (usft)</b>  | <b>Direction (°)</b> |
|                          | 0.0                            | 0.0                 | 0.0                  | 179.56               |

| <b>Plan Sections</b>  |                 |             |                       |              |              |                         |                        |                       |         |                   |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|------------------------|-----------------------|---------|-------------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) | TFO (°) | Target            |
| 0.0                   | 0.00            | 0.00        | 0.0                   | 0.0          | 0.0          | 0.00                    | 0.00                   | 0.00                  | 0.00    |                   |
| 10,362.5              | 0.00            | 0.00        | 10,362.5              | 0.0          | 0.0          | 0.00                    | 0.00                   | 0.00                  | 0.00    |                   |
| 11,109.3              | 89.62           | 179.56      | 10,840.0              | -474.3       | 3.6          | 12.00                   | 12.00                  | 0.00                  | 179.56  |                   |
| 15,674.1              | 89.62           | 179.56      | 10,870.2              | -5,038.8     | 38.7         | 0.00                    | 0.00                   | 0.00                  | 0.00    | Bobwhite 12 State |

# COG Operating LLC

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|------------------|---------------------------|-------------------------------------|---|
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| <b>Company:</b>  | NEW MEXICO BASIN          | <b>TVD Reference:</b>               | RKB = 3773+20=3793 @ 3793.0usft (PATRIOT 2) |
| <b>Project:</b>  | LEA COUNTY, NM            | <b>MD Reference:</b>                | RKB = 3773+20=3793 @ 3793.0usft (PATRIOT 2) |
| <b>Site:</b>     | DEEP BSS                  | <b>North Reference:</b>             | Grid  |
| <b>Well:</b>     | BOBWHITE 12 STATE COM #2H | <b>Survey Calculation Method:</b>   | Minimum Curvature                           |
| <b>Wellbore:</b> | Wellbore #1               |                                     |   |
| <b>Design:</b>   | DWD Plan 1                |                                     |   |

### Planned Survey

| Measured Depth (usft)                  | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|--|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 0.0                                    | 0.00            | 0.00        | 0.0                   | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| <b>Bobwhite 12 State Com #2H - SHL</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 100.0                                  | 0.00            | 0.00        | 100.0                 | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 200.0                                  | 0.00            | 0.00        | 200.0                 | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 300.0                                  | 0.00            | 0.00        | 300.0                 | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 400.0                                  | 0.00            | 0.00        | 400.0                 | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 500.0                                  | 0.00            | 0.00        | 500.0                 | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 600.0                                  | 0.00            | 0.00        | 600.0                 | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 700.0                                  | 0.00            | 0.00        | 700.0                 | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 800.0                                  | 0.00            | 0.00        | 800.0                 | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 900.0                                  | 0.00            | 0.00        | 900.0                 | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,000.0                                | 0.00            | 0.00        | 1,000.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,100.0                                | 0.00            | 0.00        | 1,100.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,200.0                                | 0.00            | 0.00        | 1,200.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,300.0                                | 0.00            | 0.00        | 1,300.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,400.0                                | 0.00            | 0.00        | 1,400.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,500.0                                | 0.00            | 0.00        | 1,500.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,600.0                                | 0.00            | 0.00        | 1,600.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,700.0                                | 0.00            | 0.00        | 1,700.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,800.0                                | 0.00            | 0.00        | 1,800.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,900.0                                | 0.00            | 0.00        | 1,900.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 2,000.0                                | 0.00            | 0.00        | 2,000.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 2,100.0                                | 0.00            | 0.00        | 2,100.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 2,200.0                                | 0.00            | 0.00        | 2,200.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 2,300.0                                | 0.00            | 0.00        | 2,300.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 2,400.0                                | 0.00            | 0.00        | 2,400.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 2,500.0                                | 0.00            | 0.00        | 2,500.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 2,600.0                                | 0.00            | 0.00        | 2,600.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 2,700.0                                | 0.00            | 0.00        | 2,700.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 2,800.0                                | 0.00            | 0.00        | 2,800.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 2,900.0                                | 0.00            | 0.00        | 2,900.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 3,000.0                                | 0.00            | 0.00        | 3,000.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 3,100.0                                | 0.00            | 0.00        | 3,100.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 3,200.0                                | 0.00            | 0.00        | 3,200.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 3,300.0                                | 0.00            | 0.00        | 3,300.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 3,400.0                                | 0.00            | 0.00        | 3,400.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 3,500.0                                | 0.00            | 0.00        | 3,500.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 3,600.0                                | 0.00            | 0.00        | 3,600.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 3,700.0                                | 0.00            | 0.00        | 3,700.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 3,800.0                                | 0.00            | 0.00        | 3,800.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 3,900.0                                | 0.00            | 0.00        | 3,900.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 4,000.0                                | 0.00            | 0.00        | 4,000.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 4,100.0                                | 0.00            | 0.00        | 4,100.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 4,200.0                                | 0.00            | 0.00        | 4,200.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 4,300.0                                | 0.00            | 0.00        | 4,300.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 4,400.0                                | 0.00            | 0.00        | 4,400.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 4,500.0                                | 0.00            | 0.00        | 4,500.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 4,600.0                                | 0.00            | 0.00        | 4,600.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 4,700.0                                | 0.00            | 0.00        | 4,700.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 4,800.0                                | 0.00            | 0.00        | 4,800.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 4,900.0                                | 0.00            | 0.00        | 4,900.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 5,000.0                                | 0.00            | 0.00        | 5,000.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |

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| <b>Site:</b>     | DEEP BSS                  | <b>North Reference:</b>             | Grid  |
| <b>Well:</b>     | BOBWHITE 12 STATE COM #2H | <b>Survey Calculation Method:</b>   | Minimum Curvature                           |
| <b>Wellbore:</b> | Wellbore #1               |                                     |   |
| <b>Design:</b>   | DWD Plan 1                |                                     |   |

### Planned Survey

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 5,100.0               | 0.00            | 0.00        | 5,100.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 5,200.0               | 0.00            | 0.00        | 5,200.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 5,300.0               | 0.00            | 0.00        | 5,300.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 5,400.0               | 0.00            | 0.00        | 5,400.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 5,500.0               | 0.00            | 0.00        | 5,500.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 5,600.0               | 0.00            | 0.00        | 5,600.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 5,700.0               | 0.00            | 0.00        | 5,700.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 5,800.0               | 0.00            | 0.00        | 5,800.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 5,900.0               | 0.00            | 0.00        | 5,900.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 6,000.0               | 0.00            | 0.00        | 6,000.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 6,100.0               | 0.00            | 0.00        | 6,100.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 6,200.0               | 0.00            | 0.00        | 6,200.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 6,300.0               | 0.00            | 0.00        | 6,300.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 6,400.0               | 0.00            | 0.00        | 6,400.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 6,500.0               | 0.00            | 0.00        | 6,500.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 6,600.0               | 0.00            | 0.00        | 6,600.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 6,700.0               | 0.00            | 0.00        | 6,700.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 6,800.0               | 0.00            | 0.00        | 6,800.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 6,900.0               | 0.00            | 0.00        | 6,900.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 7,000.0               | 0.00            | 0.00        | 7,000.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 7,100.0               | 0.00            | 0.00        | 7,100.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 7,200.0               | 0.00            | 0.00        | 7,200.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 7,300.0               | 0.00            | 0.00        | 7,300.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 7,400.0               | 0.00            | 0.00        | 7,400.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 7,500.0               | 0.00            | 0.00        | 7,500.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 7,600.0               | 0.00            | 0.00        | 7,600.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 7,700.0               | 0.00            | 0.00        | 7,700.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 7,800.0               | 0.00            | 0.00        | 7,800.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 7,900.0               | 0.00            | 0.00        | 7,900.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 8,000.0               | 0.00            | 0.00        | 8,000.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 8,100.0               | 0.00            | 0.00        | 8,100.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 8,200.0               | 0.00            | 0.00        | 8,200.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 8,300.0               | 0.00            | 0.00        | 8,300.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 8,400.0               | 0.00            | 0.00        | 8,400.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 8,500.0               | 0.00            | 0.00        | 8,500.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 8,600.0               | 0.00            | 0.00        | 8,600.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 8,700.0               | 0.00            | 0.00        | 8,700.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 8,800.0               | 0.00            | 0.00        | 8,800.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 8,900.0               | 0.00            | 0.00        | 8,900.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 9,000.0               | 0.00            | 0.00        | 9,000.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 9,100.0               | 0.00            | 0.00        | 9,100.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 9,200.0               | 0.00            | 0.00        | 9,200.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 9,300.0               | 0.00            | 0.00        | 9,300.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 9,400.0               | 0.00            | 0.00        | 9,400.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 9,500.0               | 0.00            | 0.00        | 9,500.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 9,600.0               | 0.00            | 0.00        | 9,600.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 9,700.0               | 0.00            | 0.00        | 9,700.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 9,800.0               | 0.00            | 0.00        | 9,800.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 9,900.0               | 0.00            | 0.00        | 9,900.0               | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 10,000.0              | 0.00            | 0.00        | 10,000.0              | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 10,100.0              | 0.00            | 0.00        | 10,100.0              | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 10,200.0              | 0.00            | 0.00        | 10,200.0              | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |



# COG Operating LLC

## Planning Report

|                  |                           |                                     |   |
|------------------|---------------------------|-------------------------------------|---|
| <b>Database:</b> | COG Operating, LLC        | <b>Local Co-ordinate Reference:</b> | Well BOBWHITE 12 STATE COM #2H              |
| <b>Company:</b>  | NEW MEXICO BASIN          | <b>TVD Reference:</b>               | RKB = 3773+20=3793 @ 3793.0usft (PATRIOT 2) |
| <b>Project:</b>  | LEA COUNTY, NM            | <b>MD Reference:</b>                | RKB = 3773+20=3793 @ 3793.0usft (PATRIOT 2) |
| <b>Site:</b>     | DEEP BSS                  | <b>North Reference:</b>             | Grid  |
| <b>Well:</b>     | BOBWHITE 12 STATE COM #2H | <b>Survey Calculation Method:</b>   | Minimum Curvature                           |
| <b>Wellbore:</b> | Wellbore #1               |                                     |   |
| <b>Design:</b>   | DWD Plan 1                |                                     |   |

| Planned Survey        |                 |             |                       |              |              |                         |                         |                        |                       |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
| 10,300.0              | 0.00            | 0.00        | 10,300.0              | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 10,362.5              | 0.00            | 0.00        | 10,362.5              | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 10,400.0              | 4.50            | 179.56      | 10,400.0              | -1.5         | 0.0          | 1.5                     | 12.00                   | 12.00                  | 0.00                  |
| 10,500.0              | 16.50           | 179.56      | 10,498.1              | -19.7        | 0.2          | 19.7                    | 12.00                   | 12.00                  | 0.00                  |
| 10,600.0              | 28.50           | 179.56      | 10,590.3              | -57.9        | 0.4          | 57.9                    | 12.00                   | 12.00                  | 0.00                  |
| 10,700.0              | 40.50           | 179.56      | 10,672.6              | -114.4       | 0.9          | 114.4                   | 12.00                   | 12.00                  | 0.00                  |
| 10,800.0              | 52.50           | 179.56      | 10,741.3              | -186.8       | 1.4          | 186.8                   | 12.00                   | 12.00                  | 0.00                  |
| 10,900.0              | 64.50           | 179.56      | 10,793.5              | -271.9       | 2.1          | 271.9                   | 12.00                   | 12.00                  | 0.00                  |
| 11,000.0              | 76.50           | 179.56      | 10,826.8              | -366.0       | 2.8          | 366.0                   | 12.00                   | 12.00                  | 0.00                  |
| 11,100.0              | 88.50           | 179.56      | 10,839.8              | -465.0       | 3.6          | 465.0                   | 12.00                   | 12.00                  | 0.00                  |
| 11,109.3              | 89.62           | 179.56      | 10,840.0              | -474.3       | 3.6          | 474.3                   | 12.00                   | 12.00                  | 0.00                  |
| 11,200.0              | 89.62           | 179.56      | 10,840.6              | -564.9       | 4.3          | 565.0                   | 0.00                    | 0.00                   | 0.00                  |
| 11,300.0              | 89.62           | 179.56      | 10,841.2              | -664.9       | 5.1          | 665.0                   | 0.00                    | 0.00                   | 0.00                  |
| 11,400.0              | 89.62           | 179.56      | 10,841.9              | -764.9       | 5.9          | 765.0                   | 0.00                    | 0.00                   | 0.00                  |
| 11,500.0              | 89.62           | 179.56      | 10,842.5              | -864.9       | 6.6          | 865.0                   | 0.00                    | 0.00                   | 0.00                  |
| 11,600.0              | 89.62           | 179.56      | 10,843.2              | -964.9       | 7.4          | 965.0                   | 0.00                    | 0.00                   | 0.00                  |
| 11,700.0              | 89.62           | 179.56      | 10,843.9              | -1,064.9     | 8.2          | 1,065.0                 | 0.00                    | 0.00                   | 0.00                  |
| 11,800.0              | 89.62           | 179.56      | 10,844.5              | -1,164.9     | 8.9          | 1,164.9                 | 0.00                    | 0.00                   | 0.00                  |
| 11,900.0              | 89.62           | 179.56      | 10,845.2              | -1,264.9     | 9.7          | 1,264.9                 | 0.00                    | 0.00                   | 0.00                  |
| 12,000.0              | 89.62           | 179.56      | 10,845.9              | -1,364.9     | 10.5         | 1,364.9                 | 0.00                    | 0.00                   | 0.00                  |
| 12,100.0              | 89.62           | 179.56      | 10,846.5              | -1,464.9     | 11.2         | 1,464.9                 | 0.00                    | 0.00                   | 0.00                  |
| 12,200.0              | 89.62           | 179.56      | 10,847.2              | -1,564.9     | 12.0         | 1,564.9                 | 0.00                    | 0.00                   | 0.00                  |
| 12,300.0              | 89.62           | 179.56      | 10,847.9              | -1,664.9     | 12.8         | 1,664.9                 | 0.00                    | 0.00                   | 0.00                  |
| 12,400.0              | 89.62           | 179.56      | 10,848.5              | -1,764.9     | 13.6         | 1,764.9                 | 0.00                    | 0.00                   | 0.00                  |
| 12,500.0              | 89.62           | 179.56      | 10,849.2              | -1,864.9     | 14.3         | 1,864.9                 | 0.00                    | 0.00                   | 0.00                  |
| 12,600.0              | 89.62           | 179.56      | 10,849.8              | -1,964.9     | 15.1         | 1,964.9                 | 0.00                    | 0.00                   | 0.00                  |
| 12,700.0              | 89.62           | 179.56      | 10,850.5              | -2,064.9     | 15.9         | 2,064.9                 | 0.00                    | 0.00                   | 0.00                  |
| 12,800.0              | 89.62           | 179.56      | 10,851.2              | -2,164.9     | 16.6         | 2,164.9                 | 0.00                    | 0.00                   | 0.00                  |
| 12,900.0              | 89.62           | 179.56      | 10,851.8              | -2,264.9     | 17.4         | 2,264.9                 | 0.00                    | 0.00                   | 0.00                  |
| 13,000.0              | 89.62           | 179.56      | 10,852.5              | -2,364.9     | 18.2         | 2,364.9                 | 0.00                    | 0.00                   | 0.00                  |
| 13,100.0              | 89.62           | 179.56      | 10,853.2              | -2,464.8     | 18.9         | 2,464.9                 | 0.00                    | 0.00                   | 0.00                  |
| 13,200.0              | 89.62           | 179.56      | 10,853.8              | -2,564.8     | 19.7         | 2,564.9                 | 0.00                    | 0.00                   | 0.00                  |
| 13,300.0              | 89.62           | 179.56      | 10,854.5              | -2,664.8     | 20.5         | 2,664.9                 | 0.00                    | 0.00                   | 0.00                  |
| 13,400.0              | 89.62           | 179.56      | 10,855.1              | -2,764.8     | 21.2         | 2,764.9                 | 0.00                    | 0.00                   | 0.00                  |
| 13,500.0              | 89.62           | 179.56      | 10,855.8              | -2,864.8     | 22.0         | 2,864.9                 | 0.00                    | 0.00                   | 0.00                  |
| 13,600.0              | 89.62           | 179.56      | 10,856.5              | -2,964.8     | 22.8         | 2,964.9                 | 0.00                    | 0.00                   | 0.00                  |
| 13,700.0              | 89.62           | 179.56      | 10,857.1              | -3,064.8     | 23.5         | 3,064.9                 | 0.00                    | 0.00                   | 0.00                  |
| 13,800.0              | 89.62           | 179.56      | 10,857.8              | -3,164.8     | 24.3         | 3,164.9                 | 0.00                    | 0.00                   | 0.00                  |
| 13,900.0              | 89.62           | 179.56      | 10,858.5              | -3,264.8     | 25.1         | 3,264.9                 | 0.00                    | 0.00                   | 0.00                  |
| 14,000.0              | 89.62           | 179.56      | 10,859.1              | -3,364.8     | 25.8         | 3,364.9                 | 0.00                    | 0.00                   | 0.00                  |
| 14,100.0              | 89.62           | 179.56      | 10,859.8              | -3,464.8     | 26.6         | 3,464.9                 | 0.00                    | 0.00                   | 0.00                  |
| 14,200.0              | 89.62           | 179.56      | 10,860.5              | -3,564.8     | 27.4         | 3,564.9                 | 0.00                    | 0.00                   | 0.00                  |
| 14,300.0              | 89.62           | 179.56      | 10,861.1              | -3,664.8     | 28.1         | 3,664.9                 | 0.00                    | 0.00                   | 0.00                  |
| 14,400.0              | 89.62           | 179.56      | 10,861.8              | -3,764.8     | 28.9         | 3,764.9                 | 0.00                    | 0.00                   | 0.00                  |
| 14,500.0              | 89.62           | 179.56      | 10,862.4              | -3,864.8     | 29.7         | 3,864.9                 | 0.00                    | 0.00                   | 0.00                  |
| 14,600.0              | 89.62           | 179.56      | 10,863.1              | -3,964.8     | 30.4         | 3,964.9                 | 0.00                    | 0.00                   | 0.00                  |
| 14,700.0              | 89.62           | 179.56      | 10,863.8              | -4,064.8     | 31.2         | 4,064.9                 | 0.00                    | 0.00                   | 0.00                  |
| 14,800.0              | 89.62           | 179.56      | 10,864.4              | -4,164.8     | 32.0         | 4,164.9                 | 0.00                    | 0.00                   | 0.00                  |
| 14,900.0              | 89.62           | 179.56      | 10,865.1              | -4,264.8     | 32.8         | 4,264.9                 | 0.00                    | 0.00                   | 0.00                  |
| 15,000.0              | 89.62           | 179.56      | 10,865.8              | -4,364.8     | 33.5         | 4,364.9                 | 0.00                    | 0.00                   | 0.00                  |
| 15,100.0              | 89.62           | 179.56      | 10,866.4              | -4,464.7     | 34.3         | 4,464.9                 | 0.00                    | 0.00                   | 0.00                  |
| 15,200.0              | 89.62           | 179.56      | 10,867.1              | -4,564.7     | 35.1         | 4,564.9                 | 0.00                    | 0.00                   | 0.00                  |

# COG Operating LLC

## Planning Report

|                  |                           |                                     |   |
|------------------|---------------------------|-------------------------------------|---|
| <b>Database:</b> | COG Operating, LLC        | <b>Local Co-ordinate Reference:</b> | Well BOBWHITE 12 STATE COM #2H              |
| <b>Company:</b>  | NEW MEXICO BASIN          | <b>TVD Reference:</b>               | RKB = 3773+20=3793 @ 3793.0usft (PATRIOT 2) |
| <b>Project:</b>  | LEA COUNTY, NM            | <b>MD Reference:</b>                | RKB = 3773+20=3793 @ 3793.0usft (PATRIOT 2) |
| <b>Site:</b>     | DEEP BSS                  | <b>North Reference:</b>             | Grid  |
| <b>Well:</b>     | BOBWHITE 12 STATE COM #2H | <b>Survey Calculation Method:</b>   | Minimum Curvature                           |
| <b>Wellbore:</b> | Wellbore #1               |                                     |   |
| <b>Design:</b>   | DWD Plan 1                |                                     |   |

### Planned Survey

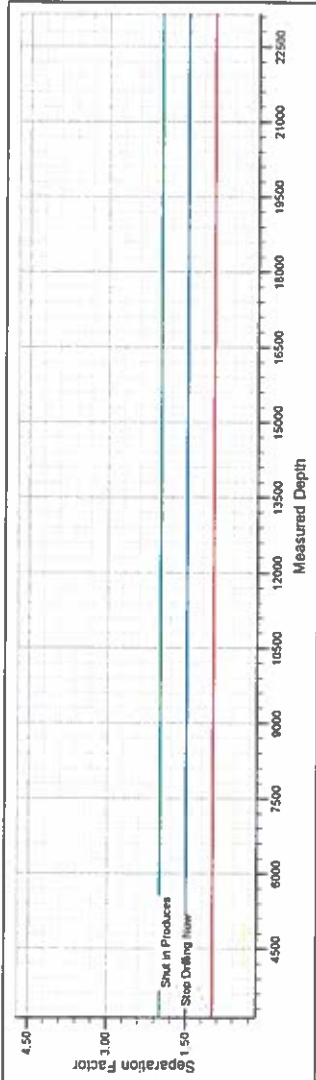
| Measured Depth (usft)           | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|---------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 15,300.0                        | 89.62           | 179.56      | 10,867.7              | -4,664.7     | 35.8         | 4,664.9                 | 0.00                    | 0.00                   | 0.00                  |
| 15,400.0                        | 89.62           | 179.56      | 10,868.4              | -4,764.7     | 36.6         | 4,764.9                 | 0.00                    | 0.00                   | 0.00                  |
| 15,500.0                        | 89.62           | 179.56      | 10,869.1              | -4,864.7     | 37.4         | 4,864.9                 | 0.00                    | 0.00                   | 0.00                  |
| 15,600.0                        | 89.62           | 179.56      | 10,869.7              | -4,964.7     | 38.1         | 4,964.9                 | 0.00                    | 0.00                   | 0.00                  |
| 15,674.1                        | 89.62           | 179.56      | 10,870.2              | -5,038.8     | 38.7         | 5,038.9                 | 0.00                    | 0.00                   | 0.00                  |
| Bobwhite 12 State Com #2H - BHL |                 |             |                       |              |              |                         |                         |                        |                       |

### Design Targets

| Target Name   | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude         | Longitude         |
|---|---------------|--------------|------------|--------------|--------------|-----------------|----------------|------------------|-------------------|
| - hit/miss target   |               |              |            |              |              |                 |                |                  |                   |
| - Shape   |               |              |            |              |              |                 |                |                  |                   |
| Bobwhite 12 State   | 0.00          | 0.00         | 0.0        | 0.0          | 0.0          | 546,532.40      | 749,682.10     | 32° 29' 59.718 N | 103° 31' 24.528 W |
| - plan hits target center   |               |              |            |              |              |                 |                |                  |                   |
| - Point   |               |              |            |              |              |                 |                |                  |                   |
| Bobwhite 12 State   | 0.37          | 179.56       | 10,870.0   | -5,038.8     | 38.7         | 541,493.60      | 749,720.80     | 32° 29' 9.856 N  | 103° 31' 24.523 W |
| - plan misses target center by 0.2usft at 15674.1usft MD (10870.2 TVD, -5038.8 N, 38.7 E) |               |              |            |              |              |                 |                |                  |                   |
| - Rectangle (sides W100.0 H5,038.9 D30.0)   |               |              |            |              |              |                 |                |                  |                   |



Project: LEA COUNTY, NM  
 Site: DEEP BSS  
 Well: BOBWHITE 12 STATE COM #2H  
 Wellbore: Wellbore #1  
 Design: DWD Plan 1



### LEGEND

- BOBWHITE 12 STATE COM #4H, OWB, ACTUAL WELLPATH V0
- BOBWHITE 12 #1H, Wellbore #1, Wellbore #1 V0
- BOBWHITE 12 STATE COM #3H, OWB, ACTUAL WELLPATH V0

