

ATS-14-793

HOBBS OCD  
OCD Hobbs

DEC 02 2014

UNORTHODOX  
RECEIVED

FORM APPROVED  
OMB No. 1004-0137  
Expires October 31, 2014

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

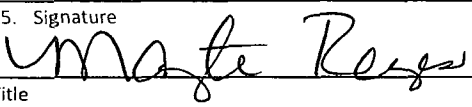

APPLICATION FOR PERMIT TO DRILL OR REENTER LOCATION

|   |   |   |
|---|---|---|
| 1a. Type of Work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER  |   | 7. If Unit or CA Agreement, Name and No.                                  |
| 1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone  |   | 8. Lease Name and Well No. <b>317919</b><br>Black Pearl 1 Federal Com #1H |
| 2. Name of Operator<br>COG Operating LLC. <b>229137</b>   |   | 9. API Well No.<br><b>30-025-42292</b>                                    |
| 3a. Address<br>2208 West Main Street<br>Artesia, NM 88210   | 3b. Phone No. (include area code)<br>575-748-6940 | 10. Field and Pool, or Exploratory<br>Lea; Bone Spring <b>37570</b>       |
| 4. Location of Well (Report location clearly and in accordance with any State requirements. *)<br>At surface 190' FNL & 990' FEL Lot #1 (NENE) SHL Section 1-T20S-R34E<br>At proposed prod. Zone 330' FSL & 660' FEL Unit Letter P (SESE) BHL Section 1-T20S-R34E |   | 11. Sec., T.R.M. or Blk and Survey or Area<br>Section 1 - T20S - R34E     |
| 14. Distance in miles and direction from nearest town or post office*<br>Approximately 20 miles from Eunice   |   | 12. County or Parish<br>Lea County  |
| 15. Distance from proposed* location to nearest property or lease line, ft.<br>(Also to nearest drig. Unit line, if any) 190'   |   | 13. State<br>NM   |
| 16. No. of acres in lease<br>NMNM128366: 602.04<br>NMNM119279: 40   |   | 17. Spacing Unit dedicated to this well<br>160.88                         |
| 18. Distance from location* to nearest well, drilling, completed, applied for, on this lease, ft.<br>SHL: 100' (Black Pearl #2H)<br>BHL: 4427'  |   | 20. BLM/BIA Bond No. on file<br>NMB000740 & NMB00215                      |
| 21. Elevations (Show whether DF, KDB, RT, GL, etc.)<br>3694.5' GL   |   | 22. Approximate date work will start*<br>7/1/2014                         |
|   |   | 23. Estimated duration<br>30 days   |

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, shall be attached to this form:

- |   |  |
|---|--|
| 1. Well plat certified by a registered surveyor.  | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).    |
| 2. A Drilling Plan  | 5. Operator certification  |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be required by the authorized officer. |

|  |                                      |                     |
|--|--------------------------------------|---------------------|
| 25. Signature<br>            | Name (Printed/Typed)<br>Mayte Reyes  | Date<br>5-14-2014   |
| Title<br>Regulatory Analyst  |                                      |                     |
| Approved by (Signature)<br> | Name (Printed/Typed)<br>Steve Caffey | Date<br>NOV 21 2014 |
| Title<br>FIELD MANAGER   |                                      |                     |
| Office<br>CARLSBAD FIELD OFFICE  |                                      |                     |

Application approval does not warrant or certify that the applicant holds legan or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Conditions of approval, if any, are attached.

APPROVAL FOR TWO YEARS

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

Capitan Controlled Water Basin

Approval Subject to General Requirements  
& Special Stipulations Attached

SEE ATTACHED FOR  
CONDITIONS OF APPROVAL

DEC 03 2014

(Instructions on page 2)

**COG Operating LLC**  
**DRILLING AND OPERATIONS PROGRAM**

**Black Pearl 1 Federal Com 1H**

**SHL: 190' FNL & 990' FEL of Section 1**

**BHL: 330' FSL & 660' FEL of Section 1**

**Section 1 T20S R34E**

**Lea County, New Mexico**

**HOBBS OCD**

**DEC 02 2014**

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In conjunction with Form 3160-3, Application for Permit to Drill subject well, COG Operating LLC submits the following eleven items of pertinent information in accordance with BLM requirements.

1. Geological surface formation: Permian
2. The estimated tops of geologic markers & estimated depths at which anticipated water, oil or gas formations are expected to be encountered are as follows:

|             |         |     |
|-------------|---------|-----|
| Fresh Water | ~270'   |     |
| Rustler     | 1832'   |     |
| Top of Salt | 1,922'  |     |
| Tansill     | 3,432'  |     |
| Yates       | 3,573'  |     |
| 7 Rivers    | 3,981'  |     |
| Queen       | 4,579'  |     |
| Delaware    | 5,530'  | Oil |
| Bone Spring | 8,146'  | Oil |
| FBSG        | 9562'   |     |
| SBSG        | 10,137' |     |
| TBSG        | 10,862' |     |
| Wolfcamp    | 11,050' |     |
| TD TVD      | 11,020' |     |
| TD MD       | 15,628' |     |

No other formations are expected to give up oil, gas or fresh water in measurable quantities. The surface fresh water sands will be protected by setting 13-3/8" casing at ~~1860'~~ <sup>1925'</sup> and circulating cement back to surface. All intervals will be isolated by setting 5 1/2" casing to total depth and tying back cement to a minimum of 500' into 9-5/8" csg.

*See COA* **3. Proposed Casing Program: All casing is new and API approved**

| Hole Size     | Depths                                 | Section                    | OD Casing | New/Used | Wt    | Collar | Grade | Collapse Design Factor | Burst Design Factor | Tension Design Factor |
|---------------|--|----------------------------|-----------|----------|-------|--------|-------|------------------------|---------------------|-----------------------|
| 17 1/2"       | 0' - <del>1860'</del> <sup>1925'</sup> | Surface                    | 13 3/8"   | New      | 54.5# | STC    | J-55  | 1.125                  | 1.125               | 1.6                   |
| 12 1/4"       | 0' - 3475'                             | Intrmd                     | 9 5/8"    | New      | 36#   | LTC    | J-55  | 1.125                  | 1.125               | 1.6                   |
| 8 3/4"-7-7/8" | 0' - 15,628'                           | Production Curve & Lateral | 5 1/2"    | New      | 17#   | LTC    | P-110 | 1.125                  | 1.125               | 1.6                   |

- After landing the curve we will reduce hole size to 7-7/8" and drill the lateral.

| Depth            | Type System | Mud Weight | Viscosity (sec) | Waterloss (cc) |
|------------------|-------------|------------|-----------------|----------------|
| 0' - 1860'       | Fresh Water | 8.4 - 8.6  | 29              | N.C.           |
| 1860' - 3,475'   | Brine       | 10-10.2    | 29              | N.C.           |
| 3,475' - 15,628' | Cut Brine   | 8.8 - 9.2  | 29              | N.C.           |

- The necessary mud products for weight addition and fluid loss control will be on location at all times.
- A visual and electronic mud monitoring system will be rigged up prior to spud to detect changes in the volume of mud system. The electronic system consists of a pit volume total, stroke counter and flow sensor at flow line.
- If weight and/or viscosity are introduced to the mud system a daily mud check will be performed by mud contractor, along with tourly check by rig personnel.
- After setting intermediate casing, a third party gas unit detection system will be installed at the flow line.

#### **8. Auxiliary Well Control and Monitoring Equipment:**

- a. A Kelly cock will be in the drill string at all times.
- b. A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor at all times.
- c. Hydrogen Sulfide detection equipment will be in operation after drilling out the 13 3/8" casing shoe until the 5 1/2" casing is cemented. Breathing equipment will be on location upon drilling the 13 3/8" shoe until total depth is reached.

*See COA*

#### **9. Testing, Logging and Coring Program:**

- a. Drill stem tests will be based on geological sample shows.
- b. If open hole electrical logging is performed, the program will be:
  - i. Total Depth to Intermediate Casing: Dual Laterolog-Micro Laterolog and Gamma Ray. Compensated Neutron – Z Density log with Gamma Ray and Caliper.
  - ii. Total Depth to Surface: Compensated Neutron with Gamma Ray
  - iii. No coring program is planned
  - iv. Additional testing will be initiated subsequent to setting the 5 1/2" production casing. Specific intervals will be targeted based on log evaluation, geological sample shows and drill stem tests.

#### **10. Potential Hazards:**

- a. No abnormal pressures or temperatures are expected. There is no known presence of H<sub>2</sub>S in this area. If H<sub>2</sub>S is encountered the operator will comply with the provisions of Onshore Oil and Gas Order No. 6. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. No H<sub>2</sub>S is anticipated to be encountered.

*See COA*

#### **11. Anticipated starting date and Duration of Operations:**

Road and location construction will begin after the BLM has approved the APD. Anticipated spud date will be as soon as possible after BLM approval and as soon as a rig will be available. Move in operations and drilling is expected to take 35 days.



## **COG Operating LLC**

Lea County, NM

Black Pearl 1 Federal

#1H

OH

Plan: Design #1

## **Standard Planning Report**

18 April, 2014



# Wellplanning Planning Report

|           |                           |                              |  |
|-----------|---------------------------|------------------------------|--|
| Database: | EDM 5000.1 Single User Db | Local Co-ordinate Reference: | Well #1H                               |
| Company:  | COG Operating LLC         | TVD Reference:               | WELL @ 3711.5usft (Original Well Elev) |
| Project:  | Lea County, NM            | MD Reference:                | WELL @ 3711.5usft (Original Well Elev) |
| Site:     | Black Pearl 1 Federal     | North Reference:             | Grid                                   |
| Well:     | #1H                       | Survey Calculation Method:   | Minimum Curvature                      |
| Wellbore: | OH                        |                              |  |
| Design:   | Design #1                 |                              |  |

|             |                                      |               |                |
|-------------|--------------------------------------|---------------|----------------|
| Project:    | Lea County, NM                       |               |                |
| 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:                 | Black Pearl 1 Federal |                        |                              |
| Site Position:        | Northing:             | 586,220.00 usft        | Latitude: 32° 36' 32.078 N   |
| From: Map             | Easting:              | 754,185.00 usft        | Longitude: 103° 30' 28.361 W |
| Position Uncertainty: | 0.0 usft              | Slot Radius: 13-3/16 " | Grid Convergence: 0.44 °     |

|                      |          |                     |                            |
|----------------------|----------|---------------------|----------------------------|
| Well:                | #1H      |                     |                            |
| Well Position        | +N/-S    | 0.0 usft            | Northing: 586,220.00 usft  |
|                      | +E/-W    | 0.0 usft            | Easting: 754,185.00 usft   |
| Position Uncertainty | 0.0 usft | Wellhead Elevation: | Ground Level: 3,694.5 usft |

|            |            |             |                |
|------------|------------|-------------|----------------|
| Wellbore:  | OH         |             |                |
| Magnetics: | Model Name | Sample Date | Declination    |
|            | IGRF2010   | 4/18/2014   | 7.23           |
|            |            |             | Dip Angle      |
|            |            |             | 60.48          |
|            |            |             | Field Strength |
|            |            |             | 48,568         |

|                   |                  |        |                   |
|-------------------|------------------|--------|-------------------|
| Design:           | Design #1        |        |                   |
| Audit Notes:      |                  |        |                   |
| Version:          | Phase:           | PLAN   | Tie On Depth: 0.0 |
| Vertical Section: | Depth From (TVD) | +N/-S  | +E/-W             |
|                   | (usft)           | (usft) | (usft)            |
|                   | 0.0              | 0.0    | 0.0               |
|                   |                  |        | Direction: 175.66 |
|                   |                  |        | (°)               |

|                |             |         |                |          |        |             |             |             |        |             |
|----------------|-------------|---------|----------------|----------|--------|-------------|-------------|-------------|--------|-------------|
| Plan Sections: |             |         |                |          |        |             |             |             |        |             |
| Measured Depth | Inclination | Azimuth | Vertical Depth | +N/-S    | +E/-W  | Dogleg Rate | Build Rate  | Turn Rate   | TFO    | Target      |
| (usft)         | (°)         | (°)     | (usft)         | (usft)   | (usft) | (°/100usft) | (°/100usft) | (°/100usft) | (°)    |             |
| 0.0            | 0.00        | 0.00    | 0.0            | 0.0      | 0.0    | 0.00        | 0.00        | 0.00        | 0.00   |             |
| 10,522.5       | 0.00        | 0.00    | 10,522.5       | 0.0      | 0.0    | 0.00        | 0.00        | 0.00        | 0.00   |             |
| 11,270.4       | 89.74       | 175.66  | 11,000.0       | -474.0   | 36.0   | 12.00       | 12.00       | 0.00        | 175.66 |             |
| 15,628.1       | 89.74       | 175.66  | 11,019.8       | -4,819.2 | 365.7  | 0.00        | 0.00        | 0.00        | 0.00   | PBHL(BP#1H) |



# Wellplanning Planning Report

|           |                           |                              |  |
|-----------|---------------------------|------------------------------|--|
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| Site:     | Black Pearl 1 Federal     | North Reference:             | Grid                                   |
| Well:     | #1H                       | Survey Calculation Method:   | Minimum Curvature                      |
| Wellbore: | OH                        |                              |  |
| Design:   | Design #1                 |                              |  |

| Planned 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) |  |
| 0.0                         | 0.00               | 0.00           | 0.0                         | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |  |
| 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                        |  |
| 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                        |  |



# Wellplanning Planning Report

|           |                           |                              |  |
|-----------|---------------------------|------------------------------|--|
| Database: | EDM 5000.1 Single User Db | Local Co-ordinate Reference: | Well #1H                               |
| Company:  | COG Operating LLC         | TVD Reference:               | WELL @ 3711.5usft (Original Well Elev) |
| Project:  | Lea County, NM            | MD Reference:                | WELL @ 3711.5usft (Original Well Elev) |
| Site:     | Black Pearl 1 Federal     | North Reference:             | Grid                                   |
| Well:     | #1H                       | Survey Calculation Method:   | Minimum Curvature                      |
| Wellbore: | OH                        |                              |  |
| Design:   | Design #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) |
| 5,400.0               | 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                  |
| 10,300.0              | 0.00            | 0.00        | 10,300.0              | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 10,400.0              | 0.00            | 0.00        | 10,400.0              | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 10,500.0              | 0.00            | 0.00        | 10,500.0              | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 10,522.5              | 0.00            | 0.00        | 10,522.5              | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 10,525.0              | 0.30            | 175.66      | 10,525.0              | 0.0          | 0.0          | 0.0                     | 12.00                   | 12.00                  | 0.00                  |





# Wellplanning Planning Report

|           |                           |                              |  |
|-----------|---------------------------|------------------------------|--|
| Database: | EDM 5000.1 Single User Db | Local Co-ordinate Reference: | Well #1H                               |
| Company:  | COG Operating LLC         | TVD Reference:               | WELL @ 3711.5usft (Original Well Elev) |
| Project:  | Lea County, NM            | MD Reference:                | WELL @ 3711.5usft (Original Well Elev) |
| Site:     | Black Pearl 1 Federal     | North Reference:             | Grid                                   |
| Well:     | #1H                       | Survey Calculation Method:   | Minimum Curvature                      |
| Wellbore: | OH                        |                              |  |
| Design:   | Design #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) |  |
| 10,550.0              | 3.30            | 175.66      | 10,550.0              | -0.8         | 0.1          | 0.8                     | 12.00                   | 12.00                  | 0.00                  |  |
| 10,575.0              | 6.30            | 175.66      | 10,574.9              | -2.9         | 0.2          | 2.9                     | 12.00                   | 12.00                  | 0.00                  |  |
| 10,600.0              | 9.30            | 175.66      | 10,599.7              | -6.3         | 0.5          | 6.3                     | 12.00                   | 12.00                  | 0.00                  |  |
| 10,625.0              | 12.30           | 175.66      | 10,624.2              | -10.9        | 0.8          | 11.0                    | 12.00                   | 12.00                  | 0.00                  |  |
| 10,650.0              | 15.30           | 175.66      | 10,648.5              | -16.9        | 1.3          | 16.9                    | 12.00                   | 12.00                  | 0.00                  |  |
| 10,675.0              | 18.30           | 175.66      | 10,672.4              | -24.1        | 1.8          | 24.1                    | 12.00                   | 12.00                  | 0.00                  |  |
| 10,700.0              | 21.30           | 175.66      | 10,695.9              | -32.5        | 2.5          | 32.6                    | 12.00                   | 12.00                  | 0.00                  |  |
| 10,725.0              | 24.30           | 175.66      | 10,719.0              | -42.2        | 3.2          | 42.3                    | 12.00                   | 12.00                  | 0.00                  |  |
| 10,750.0              | 27.30           | 175.66      | 10,741.5              | -53.0        | 4.0          | 53.2                    | 12.00                   | 12.00                  | 0.00                  |  |
| 10,775.0              | 30.30           | 175.66      | 10,763.4              | -65.0        | 4.9          | 65.2                    | 12.00                   | 12.00                  | 0.00                  |  |
| 10,800.0              | 33.30           | 175.66      | 10,784.6              | -78.2        | 5.9          | 78.4                    | 12.00                   | 12.00                  | 0.00                  |  |
| 10,825.0              | 36.30           | 175.66      | 10,805.2              | -92.4        | 7.0          | 92.7                    | 12.00                   | 12.00                  | 0.00                  |  |
| 10,850.0              | 39.30           | 175.66      | 10,824.9              | -107.7       | 8.2          | 108.0                   | 12.00                   | 12.00                  | 0.00                  |  |
| 10,875.0              | 42.30           | 175.66      | 10,843.8              | -124.0       | 9.4          | 124.3                   | 12.00                   | 12.00                  | 0.00                  |  |
| 10,900.0              | 45.30           | 175.66      | 10,861.9              | -141.2       | 10.7         | 141.6                   | 12.00                   | 12.00                  | 0.00                  |  |
| 10,925.0              | 48.30           | 175.66      | 10,879.0              | -159.4       | 12.1         | 159.8                   | 12.00                   | 12.00                  | 0.00                  |  |
| 10,950.0              | 51.30           | 175.66      | 10,895.1              | -178.4       | 13.5         | 178.9                   | 12.00                   | 12.00                  | 0.00                  |  |
| 10,975.0              | 54.30           | 175.66      | 10,910.3              | -198.3       | 15.0         | 198.8                   | 12.00                   | 12.00                  | 0.00                  |  |
| 11,000.0              | 57.30           | 175.66      | 10,924.3              | -218.9       | 16.6         | 219.5                   | 12.00                   | 12.00                  | 0.00                  |  |
| 11,025.0              | 60.29           | 175.66      | 10,937.3              | -240.2       | 18.2         | 240.9                   | 12.00                   | 12.00                  | 0.00                  |  |
| 11,050.0              | 63.29           | 175.66      | 10,949.1              | -262.2       | 19.9         | 262.9                   | 12.00                   | 12.00                  | 0.00                  |  |
| 11,075.0              | 66.29           | 175.66      | 10,959.7              | -284.7       | 21.6         | 285.5                   | 12.00                   | 12.00                  | 0.00                  |  |
| 11,100.0              | 69.29           | 175.66      | 10,969.2              | -307.8       | 23.4         | 308.7                   | 12.00                   | 12.00                  | 0.00                  |  |
| 11,125.0              | 72.29           | 175.66      | 10,977.4              | -331.3       | 25.1         | 332.3                   | 12.00                   | 12.00                  | 0.00                  |  |
| 11,150.0              | 75.29           | 175.66      | 10,984.4              | -355.3       | 27.0         | 356.3                   | 12.00                   | 12.00                  | 0.00                  |  |
| 11,175.0              | 78.29           | 175.66      | 10,990.1              | -379.5       | 28.8         | 380.6                   | 12.00                   | 12.00                  | 0.00                  |  |
| 11,200.0              | 81.29           | 175.66      | 10,994.5              | -404.1       | 30.7         | 405.2                   | 12.00                   | 12.00                  | 0.00                  |  |
| 11,225.0              | 84.29           | 175.66      | 10,997.6              | -428.8       | 32.5         | 430.0                   | 12.00                   | 12.00                  | 0.00                  |  |
| 11,250.0              | 87.29           | 175.66      | 10,999.5              | -453.6       | 34.4         | 455.0                   | 12.00                   | 12.00                  | 0.00                  |  |
| 11,270.4              | 89.74           | 175.66      | 11,000.0              | -474.0       | 36.0         | 475.3                   | 12.00                   | 12.00                  | 0.00                  |  |
| 11,300.0              | 89.74           | 175.66      | 11,000.1              | -503.5       | 38.2         | 504.9                   | 0.00                    | 0.00                   | 0.00                  |  |
| 11,400.0              | 89.74           | 175.66      | 11,000.6              | -603.2       | 45.8         | 604.9                   | 0.00                    | 0.00                   | 0.00                  |  |
| 11,500.0              | 89.74           | 175.66      | 11,001.0              | -702.9       | 53.3         | 704.9                   | 0.00                    | 0.00                   | 0.00                  |  |
| 11,600.0              | 89.74           | 175.66      | 11,001.5              | -802.6       | 60.9         | 804.9                   | 0.00                    | 0.00                   | 0.00                  |  |
| 11,700.0              | 89.74           | 175.66      | 11,001.9              | -902.3       | 68.5         | 904.9                   | 0.00                    | 0.00                   | 0.00                  |  |
| 11,800.0              | 89.74           | 175.66      | 11,002.4              | -1,002.1     | 76.0         | 1,004.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 11,900.0              | 89.74           | 175.66      | 11,002.9              | -1,101.8     | 83.6         | 1,104.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 12,000.0              | 89.74           | 175.66      | 11,003.3              | -1,201.5     | 91.2         | 1,204.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 12,100.0              | 89.74           | 175.66      | 11,003.8              | -1,301.2     | 98.8         | 1,304.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 12,200.0              | 89.74           | 175.66      | 11,004.2              | -1,400.9     | 106.3        | 1,404.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 12,300.0              | 89.74           | 175.66      | 11,004.7              | -1,500.6     | 113.9        | 1,504.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 12,400.0              | 89.74           | 175.66      | 11,005.1              | -1,600.3     | 121.5        | 1,604.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 12,500.0              | 89.74           | 175.66      | 11,005.6              | -1,700.0     | 129.0        | 1,704.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 12,600.0              | 89.74           | 175.66      | 11,006.0              | -1,799.8     | 136.6        | 1,804.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 12,700.0              | 89.74           | 175.66      | 11,006.5              | -1,899.5     | 144.2        | 1,904.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 12,800.0              | 89.74           | 175.66      | 11,006.9              | -1,999.2     | 151.7        | 2,004.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 12,900.0              | 89.74           | 175.66      | 11,007.4              | -2,098.9     | 159.3        | 2,104.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 13,000.0              | 89.74           | 175.66      | 11,007.8              | -2,198.6     | 166.9        | 2,204.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 13,100.0              | 89.74           | 175.66      | 11,008.3              | -2,298.3     | 174.4        | 2,304.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 13,200.0              | 89.74           | 175.66      | 11,008.8              | -2,398.0     | 182.0        | 2,404.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 13,300.0              | 89.74           | 175.66      | 11,009.2              | -2,497.7     | 189.6        | 2,504.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 13,400.0              | 89.74           | 175.66      | 11,009.7              | -2,597.5     | 197.1        | 2,604.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 13,500.0              | 89.74           | 175.66      | 11,010.1              | -2,697.2     | 204.7        | 2,704.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 13,600.0              | 89.74           | 175.66      | 11,010.6              | -2,796.9     | 212.3        | 2,804.9                 | 0.00                    | 0.00                   | 0.00                  |  |



# Wellplanning Planning Report

|           |                           |                              |  |
|-----------|---------------------------|------------------------------|--|
| Database: | EDM 5000.1 Single User Db | Local Co-ordinate Reference: | Well #1H                               |
| Company:  | COG Operating LLC         | TVD Reference:               | WELL @ 3711.5usft (Original Well Elev) |
| Project:  | Lea County, NM            | MD Reference:                | WELL @ 3711.5usft (Original Well Elev) |
| Site:     | Black Pearl 1 Federal     | North Reference:             | Grid                                   |
| Well:     | #1H                       | Survey Calculation Method:   | Minimum Curvature                      |
| Wellbore: | OH                        |                              |  |
| Design:   | Design #1                 |                              |  |

| Planned Survey        |                 |             |                       |              |              |                         |                         |                        |                       |  |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |  |
| 13,700.0              | 89.74           | 175.66      | 11,011.0              | -2,896.6     | 219.8        | 2,904.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 13,800.0              | 89.74           | 175.66      | 11,011.5              | -2,996.3     | 227.4        | 3,004.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 13,900.0              | 89.74           | 175.66      | 11,011.9              | -3,096.0     | 235.0        | 3,104.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 14,000.0              | 89.74           | 175.66      | 11,012.4              | -3,195.7     | 242.5        | 3,204.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 14,100.0              | 89.74           | 175.66      | 11,012.8              | -3,295.4     | 250.1        | 3,304.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 14,200.0              | 89.74           | 175.66      | 11,013.3              | -3,395.1     | 257.7        | 3,404.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 14,300.0              | 89.74           | 175.66      | 11,013.7              | -3,494.9     | 265.2        | 3,504.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 14,400.0              | 89.74           | 175.66      | 11,014.2              | -3,594.6     | 272.8        | 3,604.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 14,500.0              | 89.74           | 175.66      | 11,014.7              | -3,694.3     | 280.4        | 3,704.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 14,600.0              | 89.74           | 175.66      | 11,015.1              | -3,794.0     | 287.9        | 3,804.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 14,700.0              | 89.74           | 175.66      | 11,015.6              | -3,893.7     | 295.5        | 3,904.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 14,800.0              | 89.74           | 175.66      | 11,016.0              | -3,993.4     | 303.1        | 4,004.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 14,900.0              | 89.74           | 175.66      | 11,016.5              | -4,093.1     | 310.6        | 4,104.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 15,000.0              | 89.74           | 175.66      | 11,016.9              | -4,192.8     | 318.2        | 4,204.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 15,100.0              | 89.74           | 175.66      | 11,017.4              | -4,292.6     | 325.8        | 4,304.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 15,200.0              | 89.74           | 175.66      | 11,017.8              | -4,392.3     | 333.3        | 4,404.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 15,300.0              | 89.74           | 175.66      | 11,018.3              | -4,492.0     | 340.9        | 4,504.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 15,400.0              | 89.74           | 175.66      | 11,018.7              | -4,591.7     | 348.5        | 4,604.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 15,500.0              | 89.74           | 175.66      | 11,019.2              | -4,691.4     | 356.0        | 4,704.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 15,600.0              | 89.74           | 175.66      | 11,019.6              | -4,791.1     | 363.6        | 4,804.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 15,628.1              | 89.74           | 175.66      | 11,019.8              | -4,819.2     | 365.7        | 4,833.0                 | 0.00                    | 0.00                   | 0.00                  |  |
| PBHL(BP#1H)           |                 |             |                       |              |              |                         |                         |                        |                       |  |

| 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  |               |             |            |              |              |                 |                |                  |                   |  |
| PBHL(BP#1H)  | 0.00          | 0.00        | 11,020.0   | -4,819.2     | 365.3        | 581,400.80      | 754,550.30     | 32° 35' 44.366 N | 103° 30' 24.529 W |  |
| - plan misses target center by 0.5usft at 15628.1usft MD (11019.8 TVD, -4819.2 N, 365.7 E) |               |             |            |              |              |                 |                |                  |                   |  |
| - Point  |               |             |            |              |              |                 |                |                  |                   |  |



# Section Details

| Sec | MD      | Inc   | Azi    | TVD     | +N/-S   | +E/-W | Dleg  | TFace  | VSect  |             |
|-----|---------|-------|--------|---------|---------|-------|-------|--------|--------|-------------|
| 1   | 0.0     | 0.00  | 0.00   | 0.0     | 0.0     | 0.0   | 0.00  | 0.00   | 0.0    |             |
| 2   | 10522.5 | 0.00  | 0.00   | 10522.5 | 0.0     | 0.0   | 0.00  | 0.00   | 0.0    |             |
| 3   | 11270.4 | 89.74 | 175.66 | 11000.0 | -474.0  | 36.0  | 12.00 | 175.66 | 475.3  |             |
| 4   | 15628.1 | 89.74 | 175.66 | 11019.8 | -4819.2 | 365.7 | 0.00  | 0.00   | 4833.0 | PBHL(BP#1H) |

COG Operating LLC  
Project: Lea County, NM  
Site: Black Pearl 1 Federal  
Well: #1H  
Wellbore: OH  
Plan: Design #1 (#1H/OH)

#1H

Ground Elevation:: 3694.5  
RKB Elevation: WELL @ 3711.5usft (Original Well Elev)  
Rig Name: Original Well Elev

Northing 586220.00 Easting 754185.00 Latitude 32° 36' 32.078 N Longitude 103° 30' 28.361 W

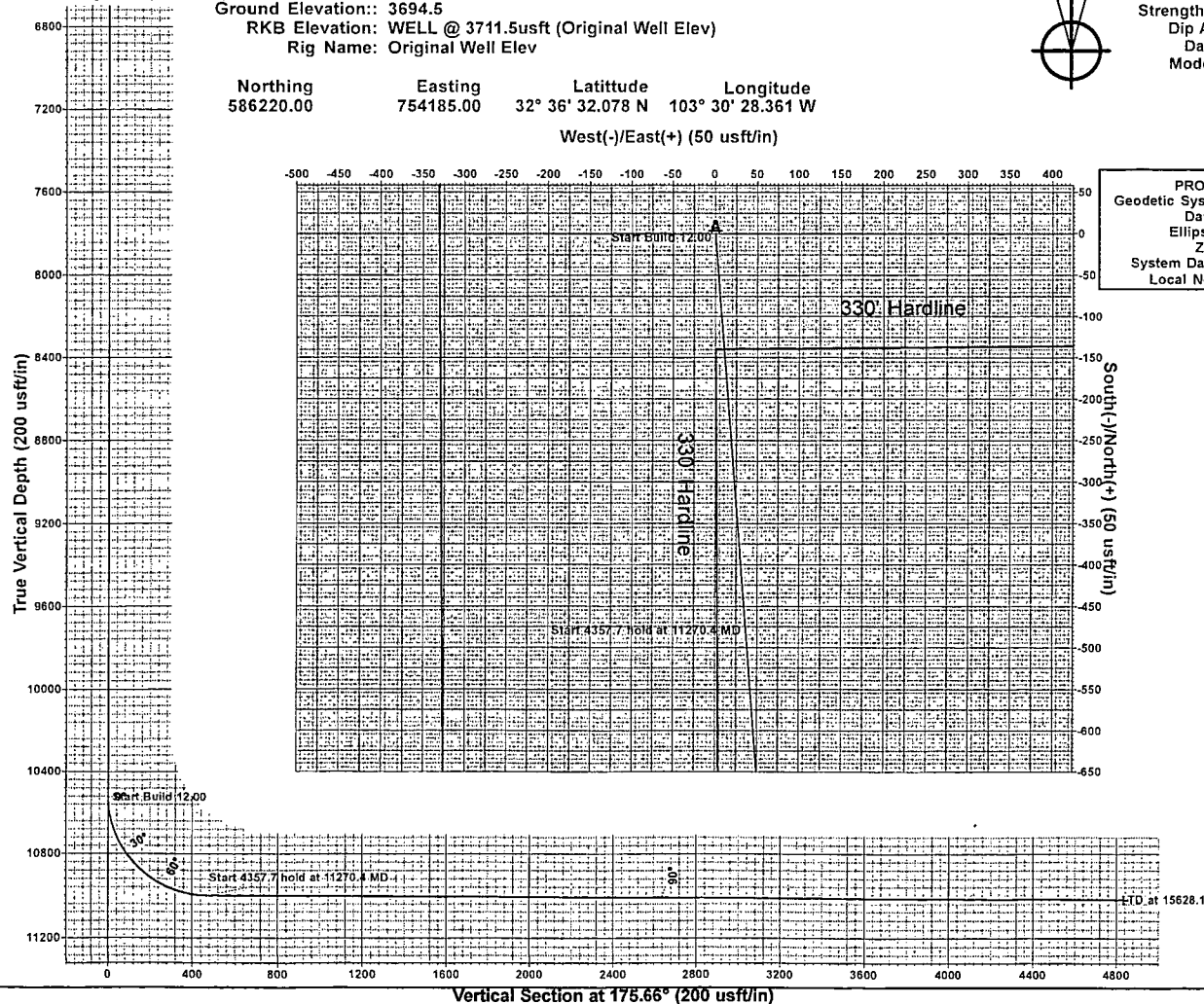
West(-)/East(+) (50 usft/in)



Azimuths to Grid North  
True North: -0.44°  
Magnetic North: 6.79°

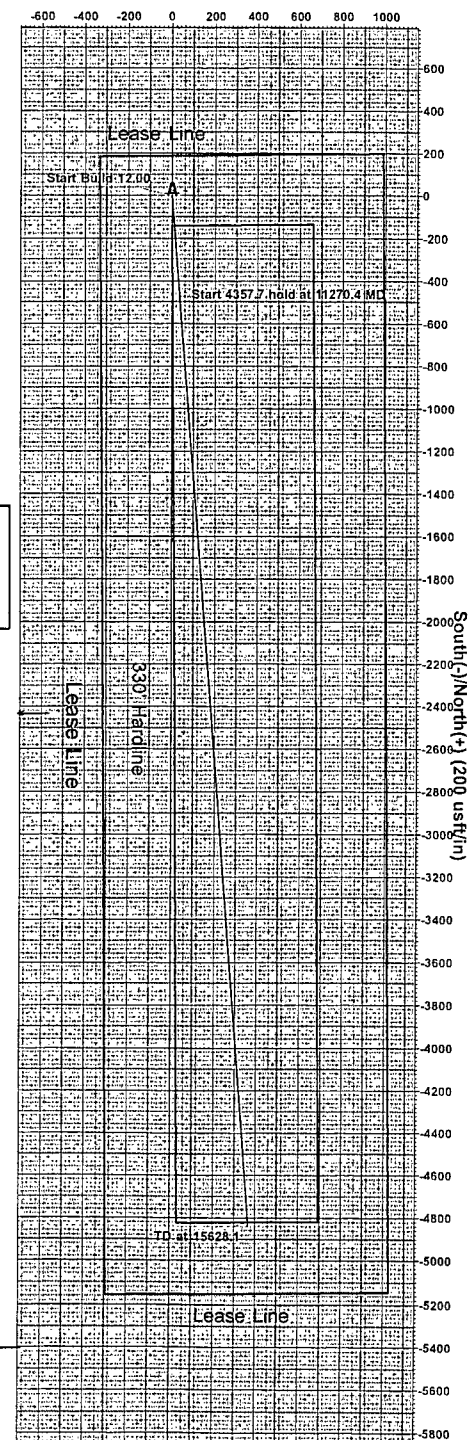
Magnetic Field  
Strength: 48568.0snT  
Dip Angle: 60.48°  
Date: 4/18/2014  
Model: IGRF2010

PROJECT DETAILS: Lea County, NM  
Geodetic System: US State Plane 1927 (Exact solution)  
Datum: NAD 1927 (NADCON CONUS)  
Ellipsoid: Clarke 1866  
Zone: New Mexico East 3001  
System Datum: Mean Sea Level  
Local North: Grid



Terra Directional Services LLC  
322 Spring Hill Drive, Suite A300, Spring, Tx 77386  
Phone: 432-425-7532

West(-)/East(+) (200 usft/in)



## LLD ACREAGE REPORT

Admin State: NM

Geo State: NM

MTR: 23 0200S 0340E

Section: 001

| <u>Sur Type</u> | <u>Sur No</u> | <u>Lld Suff</u> | <u>NE</u> <u>NW</u> <u>SW</u> <u>SE</u>         | <u>Sur Note</u> | <u>Dup</u><br><u>Flg</u> | <u>Sub</u><br><u>Surf</u> | <u>Acres</u> |
|-----------------|---------------|-----------------|---|-----------------|--------------------------|---------------------------|--------------|
|                 |               |                 | <u>NNSS</u> <u>NNSS</u> <u>NNSS</u> <u>NNSS</u> |                 |                          |                           |              |
|                 |               |                 | <u>EWWE</u> <u>EWWE</u> <u>EWWE</u> <u>EWWE</u> |                 |                          |                           |              |
| A               |               |                 | --XX --XX XXXX XXXX                             |                 |                          |                           | 480.000      |
| L               | 1             |                 | X---  |                 |                          |                           | 40.880       |
| L               | 2             |                 | -X--  |                 |                          |                           | 40.660       |
| L               | 3             |                 | ----  | X---            |                          |                           | 40.380       |
| L               | 4             |                 | ----  | -X--            |                          |                           | 40.120       |

Section 001 Total: 642.040

MTR Total Excluding Survey Notes C/D/R  
and Sub Surf = Y 642.040Grand Total Excluding Survey Notes C/D/R  
and Sub Surf = Y: 642.040



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# New Mexico Office of the State Engineer

## Water Column/Average Depth to Water

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No records found.

PLSS Search:

Section(s): 1

Township: 20S

Range: 34E

---

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

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# New Mexico Office of the State Engineer

## Water Column/Average Depth to Water

(A CLW##### in the  
POD suffix indicates the  
POD has been replaced  
& no longer serves a  
water right file.)

(R=POD has  
been replaced,  
O=orphaned,  
C=the file is  
closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest) (NAD83 UTM in meters)

(In feet)

| POD Number    | POD Sub-Code | basin | County | Q 64 | Q 16 | Q 4 | Sec | Tws | Rng | X      | Y        | Depth Well | Depth Water | Water Column |
|---------------|--------------|-------|--------|------|------|-----|-----|-----|-----|--------|----------|------------|-------------|--------------|
| CP 00665      |              | LE    |        | 1    | 4    | 24  | 20S | 34E |     | 639740 | 3603128* | 698        | 270         | 428          |
| CP 00750      |              | LE    |        | 3    | 4    | 07  | 20S | 34E |     | 631639 | 3605834* | 320        |             |              |
| CP 00799      |              | LE    |        | 4    | 3    | 4   | 20S | 34E |     | 636666 | 3599364* | 100        |             |              |
| CP 00800      |              | LE    |        | 2    | 2    | 2   | 20S | 34E |     | 637007 | 3603994* | 220        |             |              |
| CP 01204 POD1 |              | LE    |        | 3    | 1    | 1   | 20S | 34E |     | 638755 | 3602250  | 370        |             |              |

Average Depth to Water: **270 feet**

Minimum Depth: **270 feet**

Maximum Depth: **270 feet**

Record Count: 5

PLSS Search:

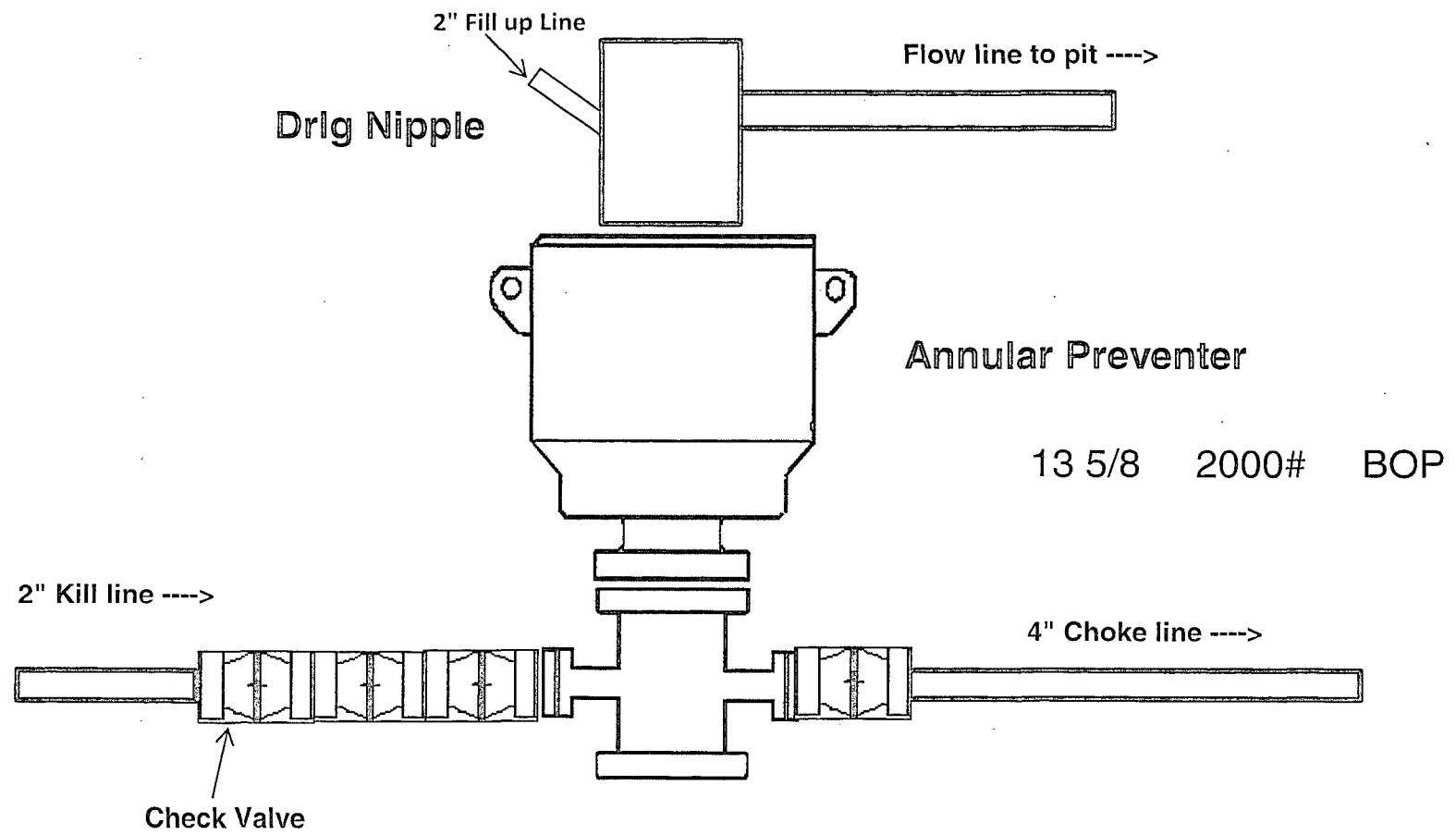
Township: 20S

Range: 34E

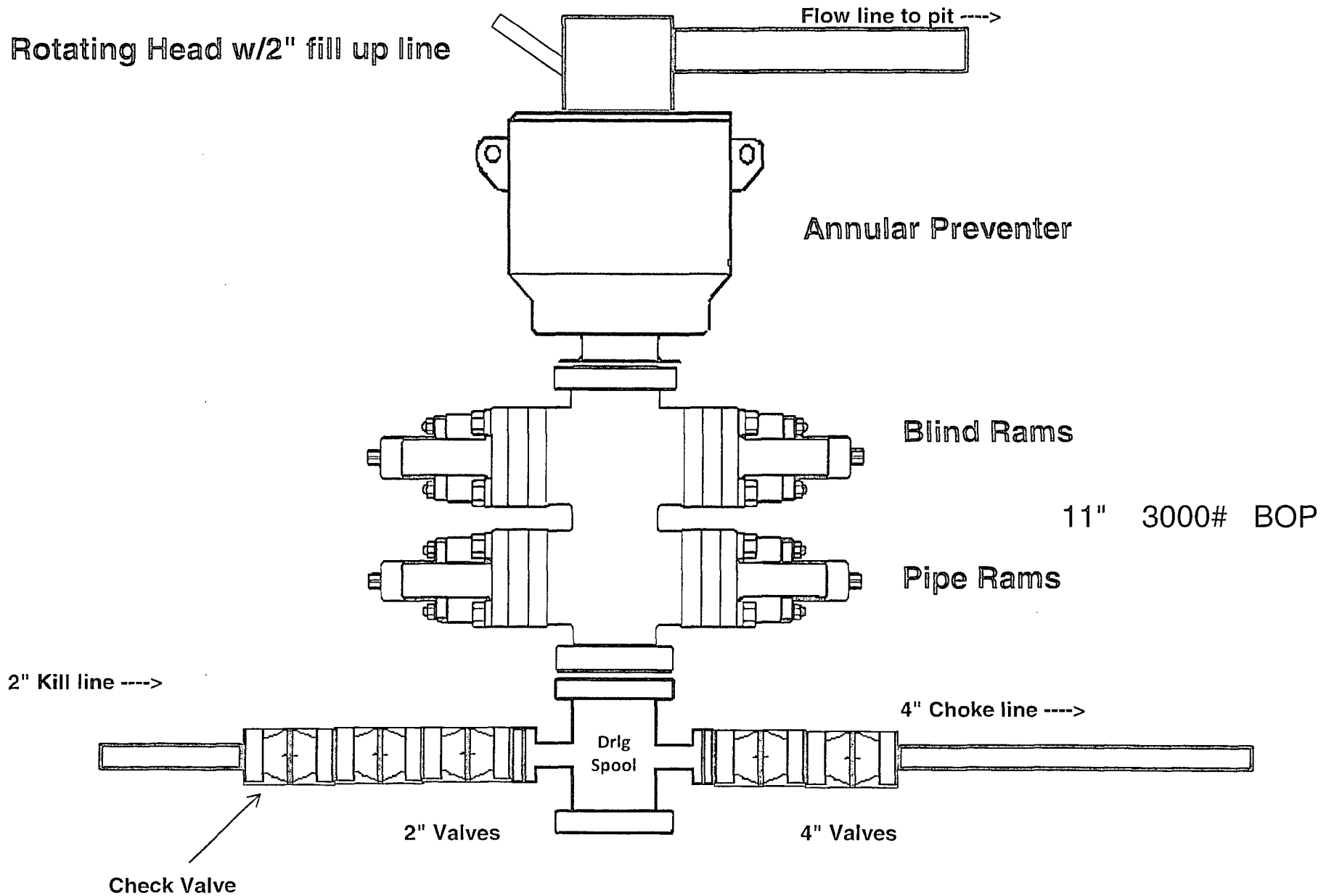
\*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

## 2,000 psi BOP Schematic

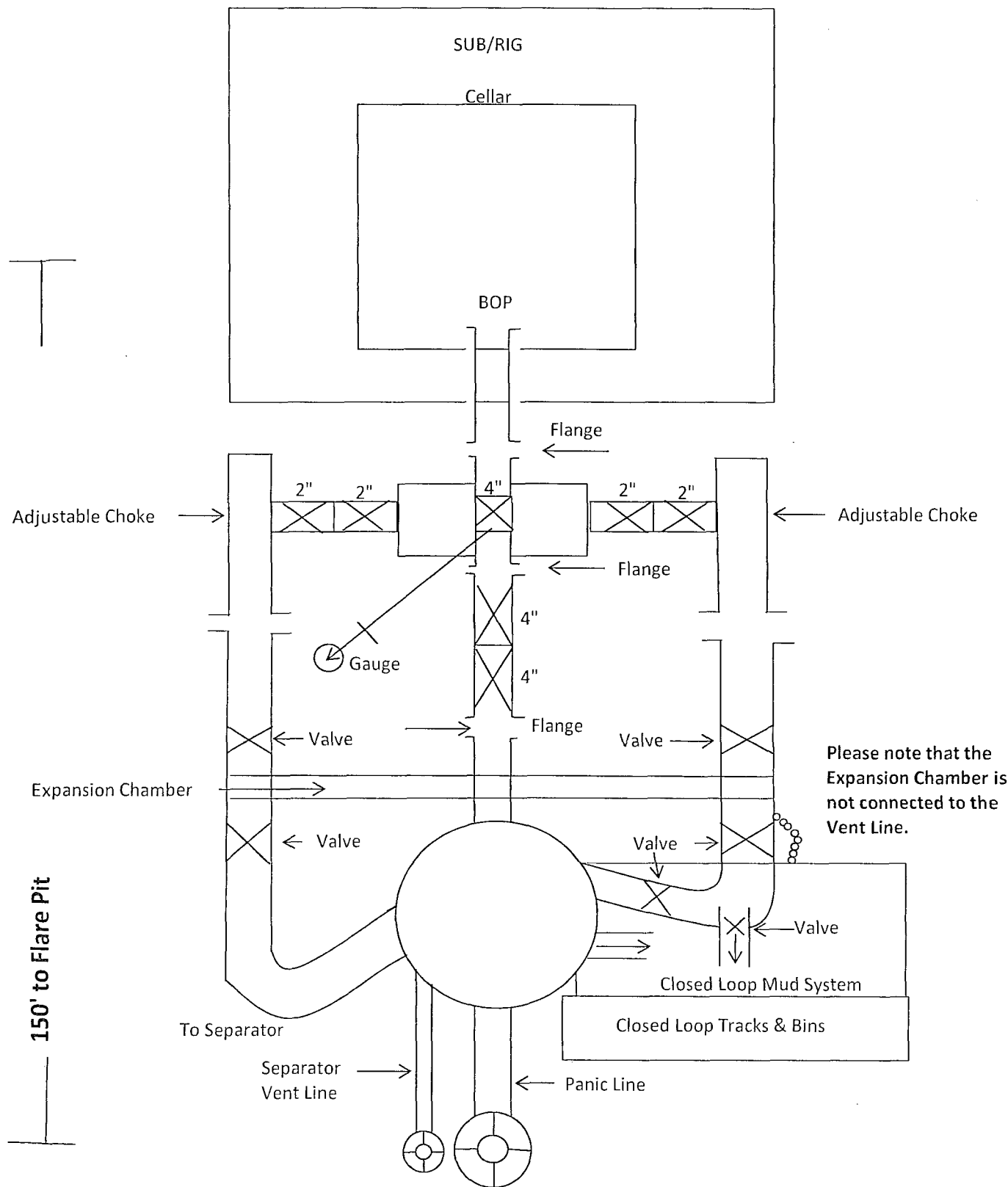


# 3,000 psi BOP Schematic

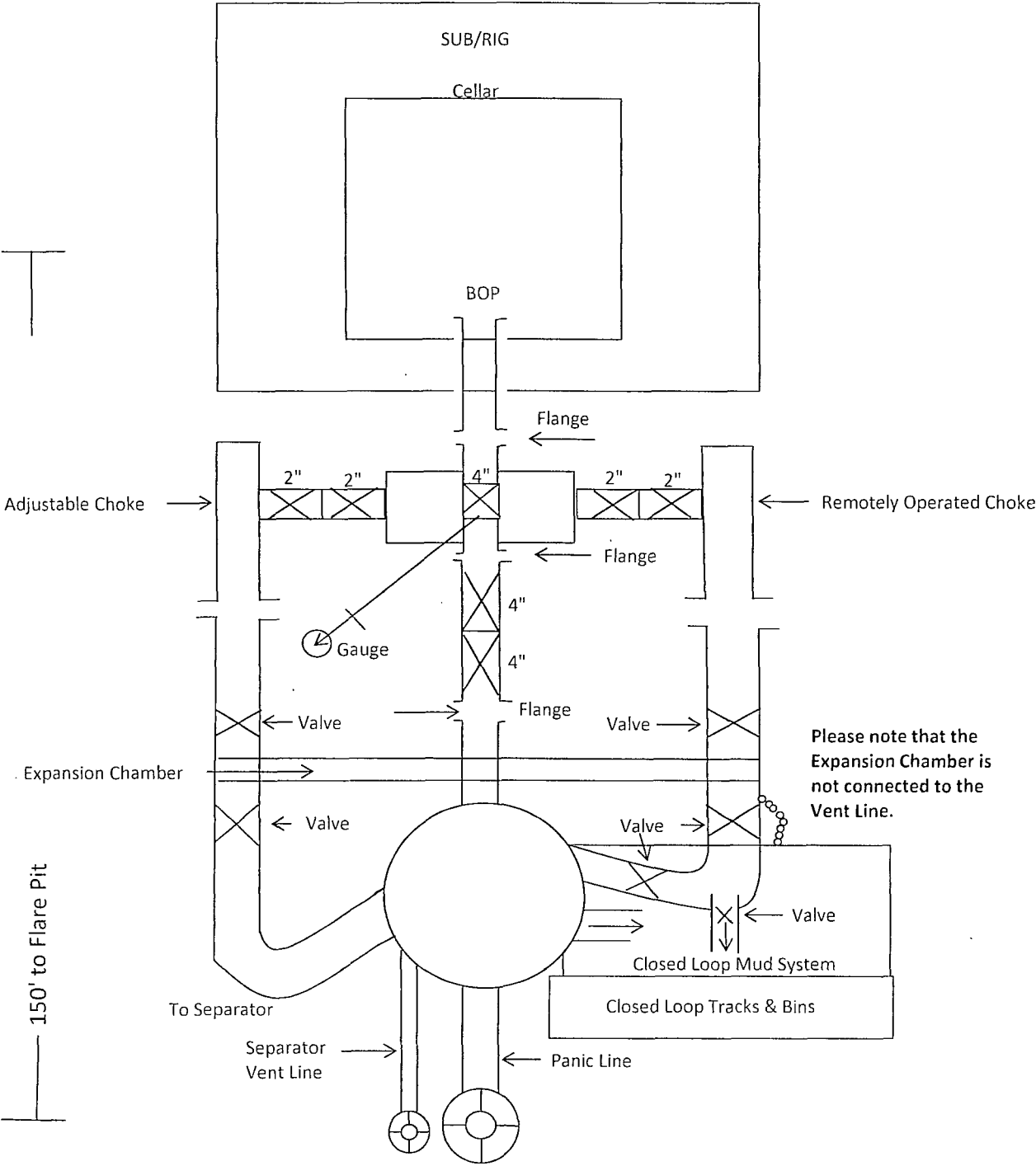




# 2M Choke Manifold Equipment



# 3M Choke Manifold Equipment



COG Operating LLC

Rig Plat & Closed Loop Equipment Diagram

Well pad will be 440' X 340'  
with cellar in center of pad

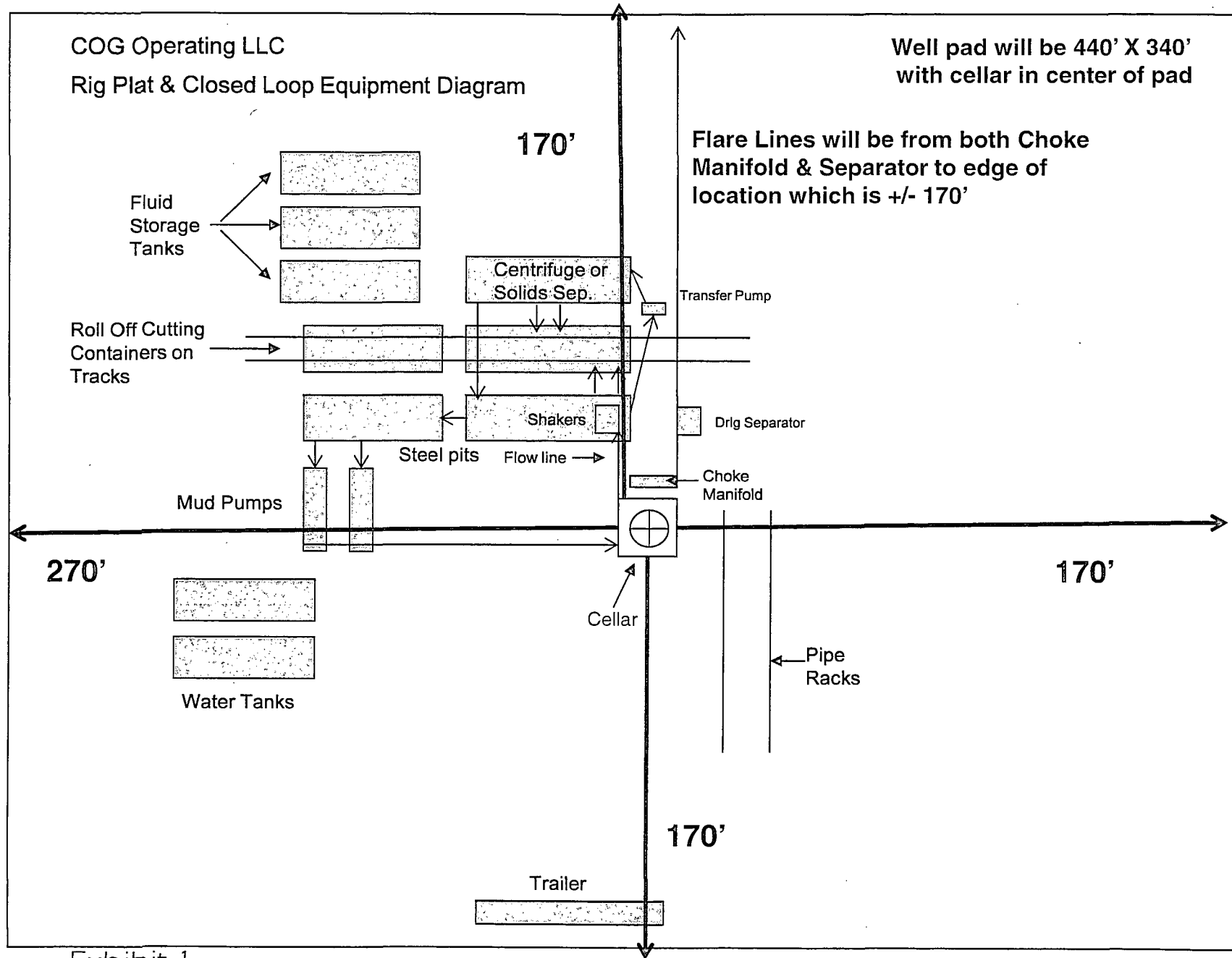


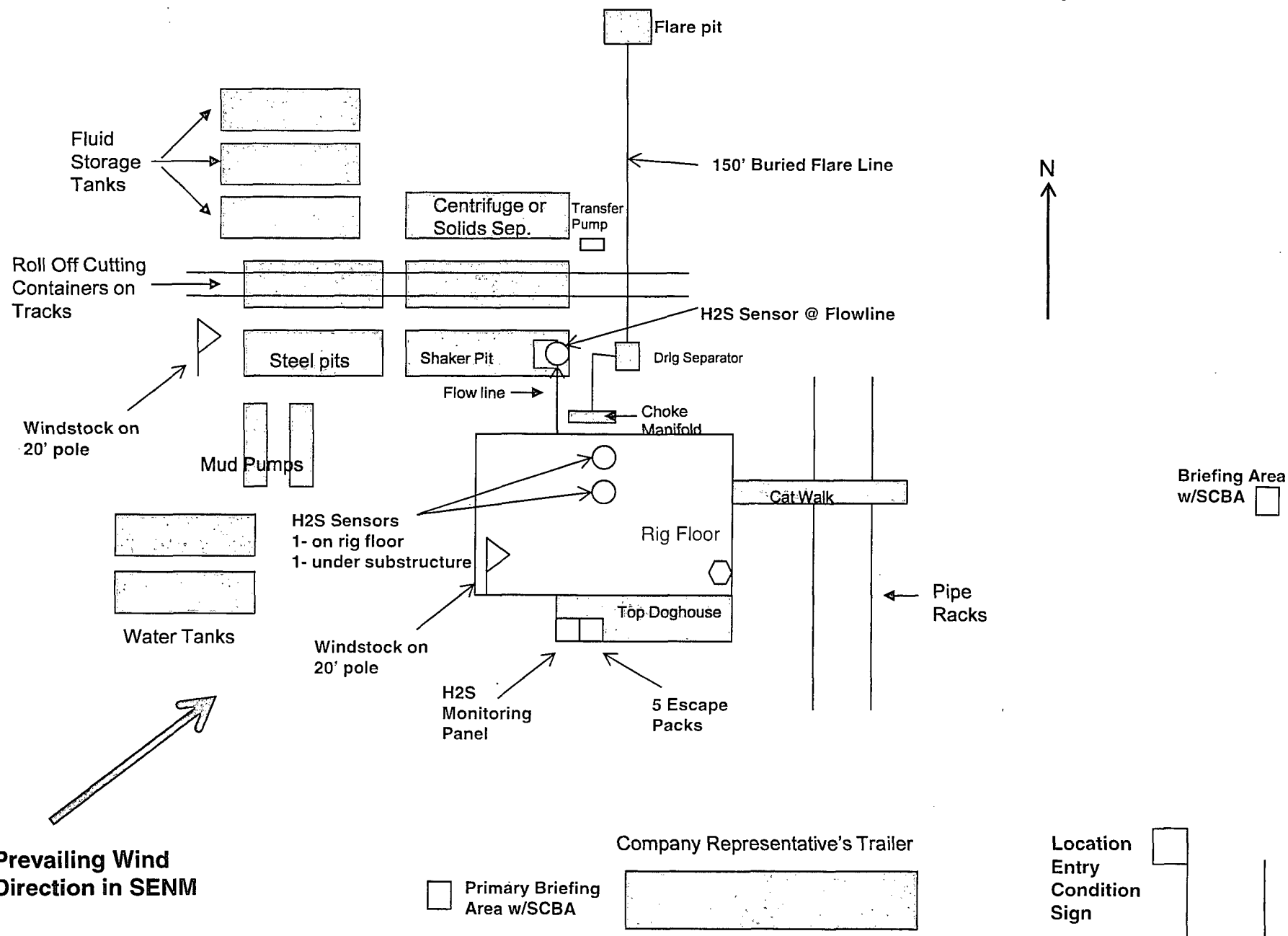
Exhibit 1

"I further certify that COG will comply with Rule 19.15.17  
NMAC by using a Closed Loop System."

Secondary egress.

Well pad will be 440' X 340'

COG Operating LLC  
H<sub>2</sub>S Equipment Schematic  
Terrain: Shinnery sand hills.



Surface Use Plan  
COG Operating LLC  
Black Pearl 1 Federal Com #1H  
SHL: 190' FNL & 990' FEL Lot #1  
Section 1, T20S, R34E  
BHL: 330' FSL & 660' FEL UL P  
Section 1, T20S, R34E  
Lea County, New Mexico

HOBBS OCD

DEC 02 2014

RECEIVED

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### OPERATOR CERTIFICATION

I hereby certify that I, or persons under my direct supervision, have inspected the drill site and access road proposed herein; that I am familiar with the conditions that presently exist; that I have full knowledge of State and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or COG Operating LLC, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements. Executed this 14th day of May, 2014.

Signed: Melanie J. Parker

Printed Name: Melanie J. Parker

Position: Regulatory Coordinator

Address: 2208 W. Main Street, Artesia, NM 88210

Telephone: (575) 748-6940

Field Representative (if not above signatory): Rand French

E-mail: [mparker@concho.com](mailto:mparker@concho.com)