

# OCD-ARTESIA

Form 3160-3  
(April 2004)

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
**APPLICATION FOR PERMIT TO DRILL OR REENTER**

FORM APPROVED  
OMB No 1004-0137  
Expires March 31, 2007

|   |  |  |
|---|--|--|
| 1a Type of work. <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER   |  | 5 Lease Serial No.<br><b>NMLC-028784B</b>  |
| 1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone           |  | 6 If Indian, Allottee or Tribe Name<br>N/A   |
| 2 Name of Operator<br><b>COG Operating LLC</b>  |  | 7 If Unit or CA Agreement, Name and No.<br><b>NMNM - 88525X; Burch Keely Unit</b>                          |
| 3a Address <b>550 W. Texas Ave., Suite 1300<br/>Midland, TX 79701</b>   |  | 8 Lease Name and Well No<br><b>BURCH KEELY UNIT #559</b>   |
| 3b Phone No. (include area code)<br><b>432-685-4384</b>   |  | 9 API Well No.<br>30-015- <b>39317</b>   |
| 4 Location of Well (Report location clearly and in accordance with any State requirements *)<br>At surface <b>1120' FNL &amp; 2480' FWL, Unit C</b><br>At proposed prod. zone <b>990' FNL &amp; 2310' FWL, Unit C</b> |  | 10 Field and Pool, or Exploratory<br><b>Grayburg Jackson; SR-Q-Grbg-SA</b>                                 |
| 11 Sec, T, R, M. or Blk and Survey or Area<br><b>Sec 18 T17S R30E</b>   |  | 12 County or Parish<br><b>EDDY</b>   |
| 13 State<br><b>NM</b>   |  | 14 Distance in miles and direction from nearest town or post office*<br><b>2 miles from Loco Hills, NM</b> |
| 15 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig unit line, if any)<br><b>1120'</b>  | 16 No. of acres in lease<br><b>1264.52</b>   | 17 Spacing Unit dedicated to this well<br><b>40</b>  |
| 18 Distance from proposed* to nearest well, drilling, completed, applied for, on this lease, ft<br><b>600'</b>  | 19 Proposed Depth <input checked="" type="checkbox"/><br><b>TVD: 4800' MD: 4810'</b> | 20 BLM/BIA Bond No. on file<br><b>NMB000740</b>  |
| 21 Elevations (Show whether DF, KDB, RT, GL, etc.)<br><b>3652' GL <input checked="" type="checkbox"/></b>   | 22 Approximate date work will start*<br><b>06/30/2011</b>                            | 23 Estimated duration<br><b>15 days</b>  |

## 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.<br>2 A Drilling Plan.<br>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) | 4 Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).<br>5 Operator certification<br>6 Such other site specific information and/or plans as may be required by the authorized officer |
|--|--|

|                                 |   |                           |
|---------------------------------|---|---------------------------|
| 25. Signature                   | Name (Printed/Typed)<br><b>Kelly J. Holly</b> | Date<br><b>05/17/2011</b> |
| Title<br><b>Permitting Tech</b> |   |                           |

|   |                      |  |
|---|----------------------|--|
| Approved by (Signature) <b>/s/ Don Peterson</b> | Name (Printed/Typed) | Date<br><b>AUG - 5 2011</b>            |
| Title<br><b>FIELD MANAGER</b>                   |                      | Office<br><b>CARLSBAD FIELD OFFICE</b> |

Application approval does not warrant or certify that the applicant holds legal 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.

\*(Instructions on page 2)



Roswell Controlled Water Basin

**SEE ATTACHED FOR  
CONDITIONS OF APPROVAL**

Approval Subject to General Requirements  
& Special Stipulations Attached



## MASTER DRILLING PROGRAM

### 1. Geologic Name of Surface Formation

Quaternary

### 2. Estimated Tops of Important Geologic Markers:

|              |         |
|--------------|---------|
| Quaternary   | Surface |
| Rustler      | 220'    |
| Salt         | 360'    |
| Base of Salt | 780'    |
| Yates        | 950'    |
| Seven Rivers | 1235'   |
| Queen        | 1845'   |
| Grayburg     | 2220'   |
| San Andres   | 2540'   |
| Glorieta     | 4000'   |
| Paddock      | 4075'   |
| Blaine       | 4620'   |
| Tubb         | 5520'   |

### 3. Estimated Depths of Anticipated Fresh Water, Oil and Gas

|            |       |             |
|------------|-------|-------------|
| Water Sand | 150'  | Fresh Water |
| Grayburg   | 2150' | Oil/Gas     |
| San Andres | 2450' | Oil/Gas     |
| Glorieta   | 3900' | Oil/Gas     |
| Paddock    | 4075' | Oil/Gas     |
| Blaine     | 4620' | Oil/Gas     |
| Tubb       | 5520' | Oil/Gas     |

See  
COA

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to 300' and circulating cement back to the surface will protect the surface fresh water sand. The Salt Section will be protected by setting 8 5/8" casing to 850' and circulating cement, in a single or multi-stage job and/or with an ECP, back to the surface. Any shallower zones above TD, which contain commercial quantities of oil and/or gas, will have cement circulated across them. This will be achieved by cementing, with a single or multi-stage job, the 5 1/2" production casing back 200' into the intermediate casing, (but calculated to surface) to be run at TD. If wellbore conditions arise that require immediate action and/or a change to this program, COG Operating LLC personnel will always react to protect the wellbore and/or environment.

See  
COA

#### 4. Casing Program

320  
1050  
4810

| Hole Size              | Interval | OD Casing | Weight    | Grade      | Jt., Condition | Jt.  | brst/clps/ten   |
|------------------------|----------|-----------|-----------|------------|----------------|------|-----------------|
| 17 1/2" <i>See COA</i> | 0-300'   | 13 3/8"   | 48#       | H-40orJ-55 | ST&C/New       | ST&C | 9.22/3.943/15.8 |
| 11" <i>COA</i>         | 0-850'   | 8 5/8"    | 24or32#   | J-55       | ST&C/New       | ST&C | 3.03/2.029/7.82 |
| 7 7/8"                 | 0-TD     | 5 1/2"    | 15.5or17# | J-55orL-80 | LT&C/New       | LT&C | 1.88/1.731/2.42 |

#### 5. Cement Program

13 3/8" Surface Casing:

Class C w/ 2% CaCl<sub>2</sub> + 0.25 pps CF, 400 sx, yield 1.32, back to surface. 154% excess

8 5/8" Intermediate Casing:

##### 11" Hole:

**Single Stage:** 50:50:10 C:Poz:Gel w/ 5% Salt +0.25% CF, 300 sx lead, yield-2.45 + Class C w/2% CaCl<sub>2</sub>, 200 sx tail, yield-1.32, back to surface. 363% excess

**Multi-Stage:** Stage 1: Class C w/2% CaCl<sub>2</sub>, 200 sx, yield - 1.32; 108% excess  
Stage 2: 50:50:10 C:Poz:Gel w/ 5% Salt +0.25% CF, 300 sx, yield - 2.45, back to surface, 726% excess; assumption for tool is lost circulation. Multi stage tool to be set at approximately, depending on hole conditions, 350' (50' below the surface casing). Cement volumes will be adjusted proportionately for depth changes of multi stage tool.

*See COA*

5 1/2" Production Casing:

**Single Stage:** LEAD 500 sx 35:65:6 C:Poz:Gel w/ 5% Salt + 5 pps LCM + 0.2% SMS + 0.3% FL-52A + 0.125 pps CF, yield-2.05; + TAIL 400 sx 50:50:2 C:Poz:Gel w/ 5% Salt + 3 pps LCM + 0.6% SMS + 1% FL-25 + 1% BA-58 + 0.3% FL-52A + 0.125 pps CF, yield-1.37, to 200' minimum tie back to intermediate casing. 106% open hole excess, cement calculated back to surface.

**Multi-Stage:** Stage 1: (Assumed TD of 4800') 500 sx 50:50:2 C:Poz:Gel w/ 5% Salt + 3 pps LCM + 0.6% SMS + 1% FL-25 + 1% BA-58 + 0.3% FL-52A + 0.125 pps CF, yield - 1.37, 72% excess; Stage 2: LEAD

*See COA*

450 sx 50:50:2 C:Poz:Gel w/ 5% Salt + 3 pps LCM + 0.6% SMS + 1% FL-25 + 1% BA-58 + 0.3% FL-52A + 0.125 pps CF, yield - 1.37, + TAIL 250 sx Class C w/ 0.3% R-3 + 1.5% CD-32, yield - 1.02 148% open hole excess, cement calculated back to surface. Multi stage tool to be set at approximately, depending on hole conditions, 2500'. Cement volumes will be adjusted proportionately for depth changes of multi stage tool, assumption for tool is water flow.

## 6. Minimum Specifications for Pressure Control

The blowout preventer equipment (BOP) shown in Exhibit #9 will consist of a double ram-type (2000 psi WP) preventer, and in some cases possibly a 2000 psi Hydril type annular preventer as provided for in Onshore Order #2. This unit will be hydraulically operated and the ram type preventer will be equipped with blind rams on top of 4 1/2" drill pipe rams on the bottom. A 13-5/8" or 11" BOP will be used, depending on the rig selected, during the drilling of the well. The BOP will be nipped up on the 13 3/8" surface casing with BOP equipment and tested to 2000 psi. When 11" BOP is used the special drilling flange will be utilized on the 13-3/8" head to allow testing the BOP with a retrievable test plug. After setting 8-5/8" the BOP will then be nipped up on the 8 5/8" intermediate casing and tested by a third party to 2000 psi and used continuously until total depth is reached. Pipe rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment (Exhibit #10) will include a Kelly cock and floor safety valve, choke lines and a choke manifold (Exhibit #11) with a 2000 psi WP rating.

The majority of the rigs currently in use have a 13-5/8" BOP, so no special provision is needed for most wells in the area for conventionally testing the BOP with a test plug. However, due to the vagaries of rig scheduling, it might be that one of the few rigs with 11" BOP's might be called upon to drill any specific well in the area. Note that intermediate hole size is always 11". Therefore, COG Operating LLC respectfully requests a variance to the requirement of 13-5/8" BOP on 13-3/8" casing. When that circumstance is encountered the special flange will be utilized to allow testing the entire BOP with a test plug, without subjecting the casing to test pressure. The special flange also allows the return to full-open capability if desired.

see  
CoA

**7. Types and Characteristics of the Proposed Mud System**

The well will be drilled to TD with a combination of brine, cut brine and polymer mud system. The applicable depths and properties of this system are as follows:

| DEPTH                           | TYPE        | WEIGHT  | VISCOSITY | WATERLOSS |
|---------------------------------|-------------|---------|-----------|-----------|
| 0-300' <i>320</i>               | Fresh Water | 8.5     | 28        | N.C.      |
| <del>300-850'</del> <i>1050</i> | Brine       | 10      | 30        | N.C.      |
| 850'-TD'                        | Cut Brine   | 8.7-9.2 | 30        | N.C.      |

Sufficient mud materials will be kept at the well site to maintain mud properties and meet minimum lost circulation and weight increase requirements at all times.

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

- A. Kelly cock will be kept in the drill string at all times.
- B. A full opening drill pipe-stabbing valve with proper drill pipe connections will be on the rig floor at all times.

**9. Logging, Testing and Coring Program *See CoA***

- A. The electric logging program will consist of GR-Dual Laterolog, Spectral Density, Dual Spaced Neutron, CSNG Log and will be run from TD to Surface.
- B. Drill Stem test is not anticipated.
- C. No conventional coring is anticipated.
- D. Further testing procedures will be determined after the 5 ½" production casing has been cemented at TD, based on drill shows and log evaluation.

**10. Abnormal Conditions, Pressure, Temperatures and Potential Hazards**

No abnormal pressures or temperatures are anticipated. The estimated bottom hole at TD is 110 degrees and the estimated maximum bottom hole pressure is 2300 psig. Measurable gas volumes or Hydrogen Sulfide levels have not been encountered during drilling operations in this area, although a Hydrogen Sulfide Drilling Operation Plan is attached to this program. No major loss of circulation zones has been reported in offsetting wells.

**11. Anticipated Starting Date and Duration of Operations**

Road and location work will not begin until approval has been received from the BLM. As this is a Master Drilling plan, please refer to the Form 3160-3 for the anticipated start date. Once commenced, drilling operations should be finished in approximately 10 days. If the well is productive, an additional 30 days will be required for completion and testing before a decision is made to install permanent facilities.



## **COG Operating LLC**

Eddy County, NM (NAN27 NME)

Burch Keely Unit #559

Burch Keely Unit #559

OH

Plan: Plan #2 7-7/8" Hole

SHL = 1120' FNL & 2480' FWL

BHL = 980' FNL & 2300' FWL

Top of Paddock = 980' FNL & 2300' FWL @ 4300' TVD

## **Standard Planning Report**

08 July, 2011





Scientific Drilling  
Planning Report



|           |                             |                              |                             |
|-----------|-----------------------------|------------------------------|-----------------------------|
| Database: | EDM-Julio                   | Local Co-ordinate Reference: | Site: Burch Keely Unit #559 |
| Company:  | COG Operating LLC           | TVD Reference:               | GL Elev @ 3652 00usft       |
| Project:  | Eddy County, NM (NAN27 NME) | MD Reference:                | GL Elev @ 3652 00usft       |
| Site:     | Burch Keely Unit #559       | North Reference:             | Grid                        |
| Well:     | Burch Keely Unit #559       | Survey Calculation Method:   | Minimum Curvature           |
| Wellbore: | OH                          |                              |                             |
| Design:   | Plan #2 7-7/8" Hole         |                              |                             |

|             |                                      |               |                |
|-------------|--------------------------------------|---------------|----------------|
| Project:    | Eddy County, NM (NAN27 NME)          |               |                |
| Map System: | US State Plane 1927 (Exact solution) | System Datum: | Mean Sea Level |
| Geo Datum:  | NAD 1927 (NADCON CONUS)              |               |                |
| Map Zone:   | New Mexico East 3001                 |               |                |

|                       |                       |              |                 |                             |
|-----------------------|-----------------------|--------------|-----------------|-----------------------------|
| Site:                 | Burch Keely Unit #559 |              |                 |                             |
| Site Position:        |                       | Northing:    | 668,944 70 usft | Latitude: 32° 50' 18.959 N  |
| From:                 | Map                   | Easting:     | 598,977 30 usft | Longitude: 104° 0' 39.887 W |
| Position Uncertainty: | 0 00 usft             | Slot Radius: | 13-3/16"        | Grid Convergence: 0.17 °    |

|                      |                       |                     |           |                             |
|----------------------|-----------------------|---------------------|-----------|-----------------------------|
| Well:                | Burch Keely Unit #559 |                     |           |                             |
| Well Position        | +N/-S                 | 0 00 usft           | Northing: | 668,944 70 usft             |
|                      | +E/-W                 | 0 00 usft           | Easting:  | 598,977 30 usft             |
| Position Uncertainty | 0 00 usft             | Wellhead Elevation: |           | Ground Level: 3,652 00 usft |

|           |    |  |  |  |
|-----------|----|--|--|--|
| Wellbore: | OH |  |  |  |
|-----------|----|--|--|--|

|           |            |             |             |           |                |
|-----------|------------|-------------|-------------|-----------|----------------|
| Magnetics | Model Name | Sample Date | Declination | Dip Angle | Field Strength |
|           |            |             | (°)         | (°)       | (nT)           |
|           | IGRF2010   | 2011/07/08  | 7.83        | 60.68     | 48,930         |

|                   |                     |        |        |                    |
|-------------------|---------------------|--------|--------|--------------------|
| Design:           | Plan #2 7-7/8" Hole |        |        |                    |
| Audit Notes:      |                     |        |        |                    |
| Version:          |                     | Phase: | PLAN   | Tie On Depth: 0 00 |
| Vertical Section: | Depth From (TVD)    | +N/-S  | +E/-W  | Direction          |
|                   | (usft)              | (usft) | (usft) | (°)                |
|                   | 0 00                | 0.00   | 0.00   | 307.69             |

|                |             |         |                |        |         |             |             |             |        |              |
|----------------|-------------|---------|----------------|--------|---------|-------------|-------------|-------------|--------|--------------|
| 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 00           | 0 00        | 0 00    | 0 00           | 0 00   | 0 00    | 0 00        | 0 00        | 0 00        | 0 00   |              |
| 1,450 00       | 0.00        | 0 00    | 1,450 00       | 0 00   | 0 00    | 0 00        | 0 00        | 0 00        | 0 00   |              |
| 1,700 47       | 5 01        | 307 69  | 1,700 15       | 6 69   | -8 66   | 2 00        | 2 00        | 0 00        | 307 69 |              |
| 4,059 18       | 5 01        | 307 69  | 4,049 85       | 132 61 | -171.64 | 0 00        | 0 00        | 0 00        | 0 00   |              |
| 4,309 65       | 0 00        | 0 00    | 4,300 00       | 139 30 | -180 30 | 2 00        | -2 00       | 0 00        | 180 00 | TG1-BK #559  |
| 4,809 65       | 0 00        | 0 00    | 4,800 00       | 139 30 | -180 30 | 0 00        | 0 00        | 0 00        | 0 00   | PBHL-BK #559 |





Scientific Drilling  
Planning Report



|           |                             |                              |                            |
|-----------|-----------------------------|------------------------------|----------------------------|
| Database: | EDM-Julio                   | Local Co-ordinate Reference: | Site Burch Keely Unit #559 |
| Company:  | COG Operating LLC           | TVD Reference:               | GL Elev @ 3652 00usft      |
| Project:  | Eddy County, NM (NAN27 NME) | MD Reference:                | GL Elev @ 3652 00usft      |
| Site:     | Burch Keely Unit #559       | North Reference:             | Grid                       |
| Well:     | Burch Keely Unit #559       | Survey Calculation Method:   | Minimum Curvature          |
| Wellbore: | OH                          |                              |                            |
| Design:   | Plan #2 7-7/8" Hole         |                              |                            |

| 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 00                               | 0 00            | 0 00        | 0 00                  | 0 00        | 0 00        | 0 00                    | 0 00                    | 0 00                   | 0 00                  |  |
| South HL-BK #559 - East HL-BK #559 |                 |             |                       |             |             |                         |                         |                        |                       |  |
| 1,350 00                           | 0 00            | 0 00        | 1,350 00              | 0 00        | 0 00        | 0 00                    | 0 00                    | 0 00                   | 0 00                  |  |
| 8-5/8" Casing                      |                 |             |                       |             |             |                         |                         |                        |                       |  |
| 1,450 00                           | 0 00            | 0 00        | 1,450 00              | 0 00        | 0 00        | 0 00                    | 0 00                    | 0 00                   | 0 00                  |  |
| KOP Start Build 2.00°/100'         |                 |             |                       |             |             |                         |                         |                        |                       |  |
| 1,500 00                           | 1 00            | 307 69      | 1,500.00              | 0 27        | -0 35       | 0.44                    | 2 00                    | 2 00                   | 0 00                  |  |
| 1,600 00                           | 3 00            | 307 69      | 1,599.93              | 2.40        | -3 11       | 3 93                    | 2 00                    | 2 00                   | 0 00                  |  |
| 1,700 00                           | 5 00            | 307 69      | 1,699 68              | 6 66        | -8 63       | 10 90                   | 2 00                    | 2 00                   | 0 00                  |  |
| 1,700 47                           | 5 01            | 307 69      | 1,700.15              | 6 69        | -8 66       | 10 94                   | 1 99                    | 1 99                   | 0 00                  |  |
| EOC hold 5.01°                     |                 |             |                       |             |             |                         |                         |                        |                       |  |
| 1,800 00                           | 5 01            | 307 69      | 1,799 30              | 12 00       | -15 54      | 19 63                   | 0 00                    | 0 00                   | 0 00                  |  |
| 1,900 00                           | 5 01            | 307 69      | 1,898 92              | 17 34       | -22 45      | 28 37                   | 0 00                    | 0 00                   | 0 00                  |  |
| 2,000 00                           | 5 01            | 307 69      | 1,998.54              | 22 68       | -29 36      | 37 10                   | 0 00                    | 0 00                   | 0 00                  |  |
| 2,100 00                           | 5 01            | 307 69      | 2,098 16              | 28 02       | -36 27      | 45 83                   | 0 00                    | 0 00                   | 0 00                  |  |
| 2,200 00                           | 5 01            | 307 69      | 2,197 77              | 33 36       | -43 18      | 54.56                   | 0 00                    | 0 00                   | 0 00                  |  |
| 2,300 00                           | 5 01            | 307 69      | 2,297 39              | 38 70       | -50 09      | 63 29                   | 0 00                    | 0 00                   | 0 00                  |  |
| 2,400 00                           | 5 01            | 307 69      | 2,397 01              | 44 03       | -57 00      | 72 02                   | 0 00                    | 0 00                   | 0 00                  |  |
| 2,500 00                           | 5 01            | 307 69      | 2,496 63              | 49 37       | -63 90      | 80 76                   | 0 00                    | 0 00                   | 0 00                  |  |
| 2,600 00                           | 5 01            | 307 69      | 2,596 25              | 54 71       | -70 81      | 89 49                   | 0 00                    | 0 00                   | 0 00                  |  |
| 2,700 00                           | 5 01            | 307 69      | 2,695 86              | 60 05       | -77 72      | 98 22                   | 0 00                    | 0 00                   | 0 00                  |  |
| 2,800 00                           | 5 01            | 307 69      | 2,795 48              | 65 39       | -84 63      | 106 95                  | 0 00                    | 0 00                   | 0 00                  |  |
| 2,900 00                           | 5 01            | 307 69      | 2,895.10              | 70 73       | -91 54      | 115.68                  | 0 00                    | 0 00                   | 0 00                  |  |
| 3,000 00                           | 5 01            | 307 69      | 2,994 72              | 76 07       | -98 45      | 124 42                  | 0 00                    | 0 00                   | 0 00                  |  |
| 3,100 00                           | 5 01            | 307 69      | 3,094.34              | 81 40       | -105 36     | 133 15                  | 0 00                    | 0 00                   | 0 00                  |  |
| 3,200 00                           | 5 01            | 307 69      | 3,193.95              | 86.74       | -112 27     | 141 88                  | 0 00                    | 0 00                   | 0 00                  |  |
| 3,300 00                           | 5 01            | 307 69      | 3,293 57              | 92 08       | -119 18     | 150 61                  | 0 00                    | 0 00                   | 0 00                  |  |
| 3,400 00                           | 5 01            | 307 69      | 3,393 19              | 97 42       | -126 09     | 159 34                  | 0 00                    | 0 00                   | 0 00                  |  |
| 3,500 00                           | 5 01            | 307 69      | 3,492 81              | 102 76      | -133 00     | 168 07                  | 0 00                    | 0 00                   | 0 00                  |  |
| 3,600 00                           | 5 01            | 307 69      | 3,592 43              | 108 10      | -139 91     | 176 81                  | 0 00                    | 0 00                   | 0 00                  |  |
| 3,700 00                           | 5 01            | 307 69      | 3,692 04              | 113 44      | -146 82     | 185 54                  | 0 00                    | 0 00                   | 0 00                  |  |
| 3,800 00                           | 5 01            | 307 69      | 3,791 66              | 118 77      | -153.73     | 194 27                  | 0 00                    | 0 00                   | 0 00                  |  |
| 3,900 00                           | 5 01            | 307 69      | 3,891 28              | 124.11      | -160 64     | 203 00                  | 0 00                    | 0 00                   | 0 00                  |  |
| 4,000 00                           | 5 01            | 307 69      | 3,990.90              | 129 45      | -167 55     | 211 73                  | 0 00                    | 0 00                   | 0 00                  |  |
| 4,059.18                           | 5 01            | 307 69      | 4,049 85              | 132.61      | -171 64     | 216 90                  | 0 00                    | 0 00                   | 0 00                  |  |
| Start Drop 2.00°/100'              |                 |             |                       |             |             |                         |                         |                        |                       |  |
| 4,100 00                           | 4 19            | 307 69      | 4,090 54              | 134 61      | -174 23     | 220 18                  | 2 00                    | -2 00                  | 0 00                  |  |
| 4,200 00                           | 2 19            | 307 69      | 4,190 38              | 138 02      | -178.64     | 225 75                  | 2 00                    | -2 00                  | 0 00                  |  |
| 4,300 00                           | 0 19            | 307 69      | 4,290 35              | 139 29      | -180 29     | 227 83                  | 2 00                    | -2 00                  | 0 00                  |  |
| 4,309 65                           | 0 00            | 0 00        | 4,300 00              | 139 30      | -180 30     | 227 84                  | 2 00                    | -2 00                  | 542 23                |  |
| EOC hold 0.00° - TG1-BK #559       |                 |             |                       |             |             |                         |                         |                        |                       |  |
| 4,809 65                           | 0 00            | 0 00        | 4,800 00              | 139 30      | -180.30     | 227 84                  | 0 00                    | 0 00                   | 0 00                  |  |
| PBHL-BK #559                       |                 |             |                       |             |             |                         |                         |                        |                       |  |



Scientific Drilling  
Planning Report



|           |                             |                              |                            |
|-----------|-----------------------------|------------------------------|----------------------------|
| Database: | EDM-Julio                   | Local Co-ordinate Reference: | Site Burch Keely Unit #559 |
| Company:  | COG Operating LLC           | TVD Reference:               | GL Elev @ 3652.00usft      |
| Project:  | Eddy County, NM (NAN27 NME) | MD Reference:                | GL Elev @ 3652.00usft      |
| Site:     | Burch Keely Unit #559       | North Reference:             | Grid                       |
| Well:     | Burch Keely Unit #559       | Survey Calculation Method:   | Minimum Curvature          |
| Wellbore: | OH                          |                              |                            |
| Design:   | Plan #2 7-7/8" Hole         |                              |                            |

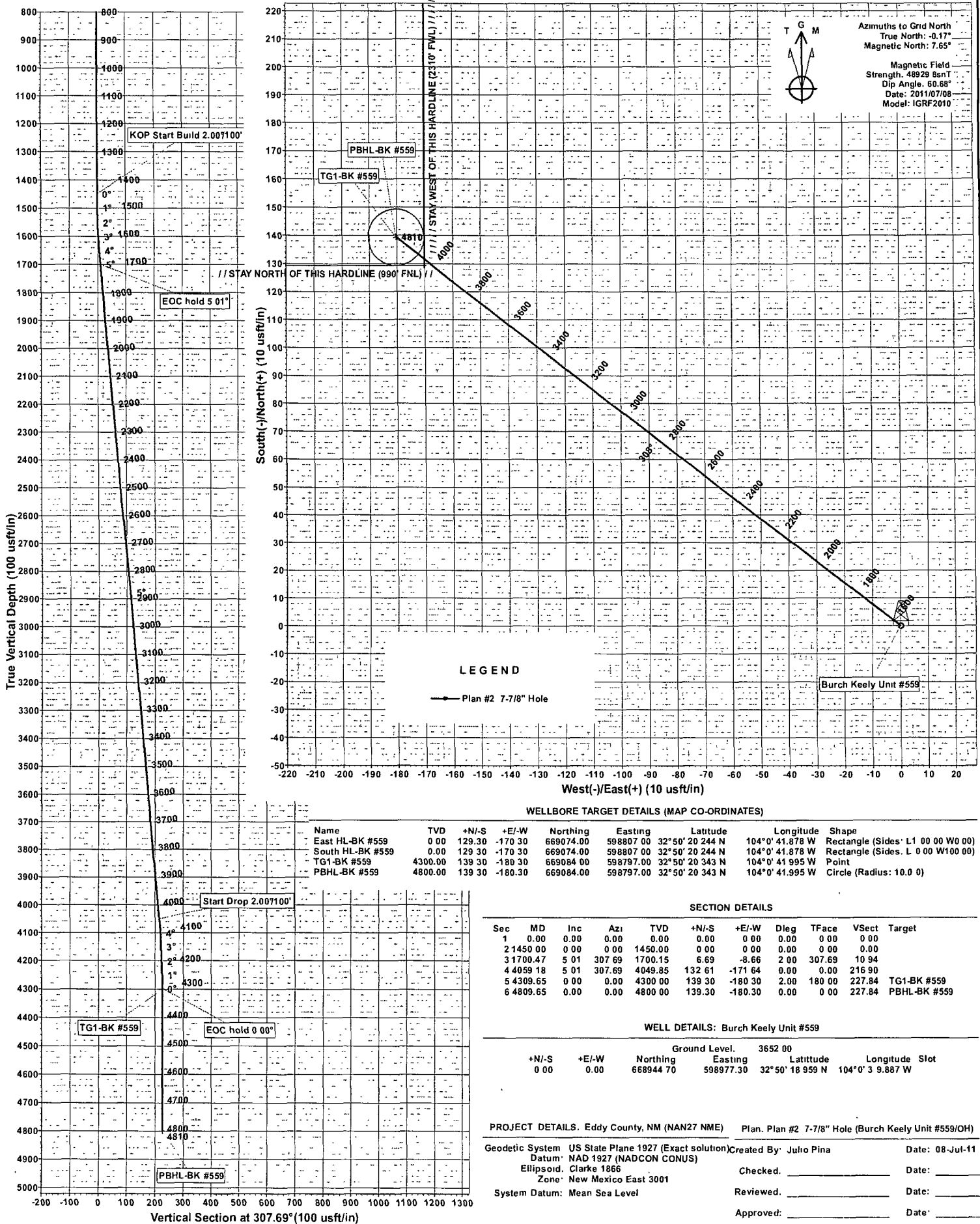
| Design Targets  |                 |           |          |          |        |         |            |            |                                   |
|---|-----------------|-----------|----------|----------|--------|---------|------------|------------|-----------------------------------|
| Target Name   | hit/miss-target | Dip Angle | Dip Dir. | TVD      | +N/-S  | +E/-W   | Northing   | Easting    |                                   |
| Shape   |                 | (°)       | (°)      | (usft)   | (usft) | (usft)  | (usft)     | (usft)     | Latitude Longitude                |
| South HL-BK #559  |                 | 0.00      | 0.00     | 0.00     | 129.30 | -170.30 | 669,074.00 | 598,807.00 | 32° 50' 20.244 N 104° 0' 41.878 W |
| - plan misses target center by 213.82usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) |                 |           |          |          |        |         |            |            |                                   |
| - Rectangle (sides W100.00 H0.00 D0.00)   |                 |           |          |          |        |         |            |            |                                   |
| East HL-BK #559   |                 | 0.00      | 0.00     | 0.00     | 129.30 | -170.30 | 669,074.00 | 598,807.00 | 32° 50' 20.244 N 104° 0' 41.878 W |
| - plan misses target center by 213.82usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) |                 |           |          |          |        |         |            |            |                                   |
| - Rectangle (sides W0.00 H100.00 D0.00)   |                 |           |          |          |        |         |            |            |                                   |
| TG1-BK #559   |                 | 0.00      | 0.00     | 4,300.00 | 139.30 | -180.30 | 669,084.00 | 598,797.00 | 32° 50' 20.343 N 104° 0' 41.995 W |
| - plan hits target center   |                 |           |          |          |        |         |            |            |                                   |
| - Point   |                 |           |          |          |        |         |            |            |                                   |
| PBHL-BK #559  |                 | 0.00      | 0.01     | 4,800.00 | 139.30 | -180.30 | 669,084.00 | 598,797.00 | 32° 50' 20.343 N 104° 0' 41.995 W |
| - plan hits target center   |                 |           |          |          |        |         |            |            |                                   |
| - Circle (radius 10.00)   |                 |           |          |          |        |         |            |            |                                   |

| Casing Points  |                |               |  |                 |               |
|----------------|----------------|---------------|--|-----------------|---------------|
| Measured Depth | Vertical Depth |               |  | Casing Diameter | Hole Diameter |
| (usft)         | (usft)         | Name          |  | (")             | (")           |
| 1,350.00       | 1,350.00       | 8-5/8" Casing |  | 8-5/8           | 12-1/4        |

| Plan Annotations |                |                   |              |                            |
|------------------|----------------|-------------------|--------------|----------------------------|
| Measured Depth   | Vertical Depth | Local Coordinates |              | Comment                    |
| (usft)           | (usft)         | +N/-S (usft)      | +E/-W (usft) |                            |
| 1,450.00         | 1,450.00       | 0.00              | 0.00         | KOP Start Build 2.00°/100' |
| 1,700.47         | 1,700.15       | 6.69              | -8.66        | EOC hold 5.01°             |
| 4,059.18         | 4,049.85       | 132.61            | -171.64      | Start Drop 2.00°/100'      |
| 4,309.65         | 4,300.00       | 139.30            | -180.30      | EOC hold 0.00°             |



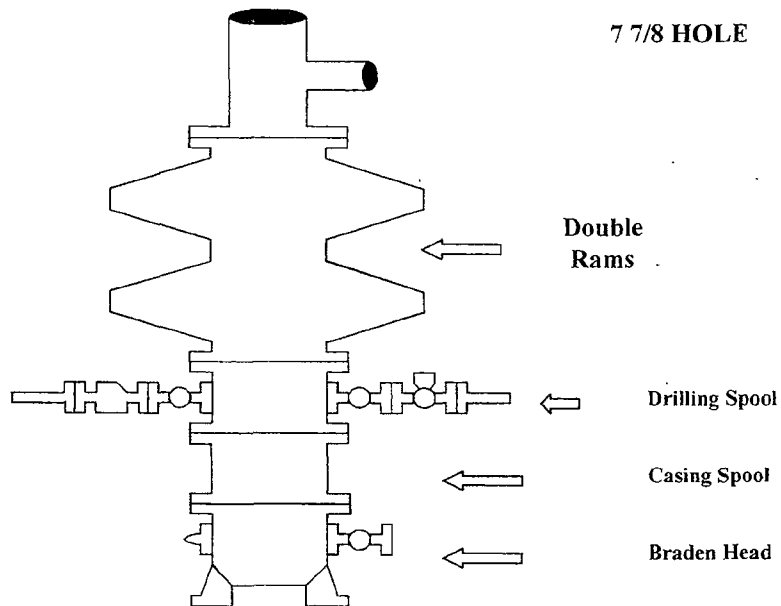
Scientific Drilling for COG Operating LLC  
Site: Eddy County, NM (NAN27 NME)  
Well: Burch Keely Unit #559  
Wellbore: OH  
Design: Plan #2 7-7/8" Hole



# COG Operating LLC

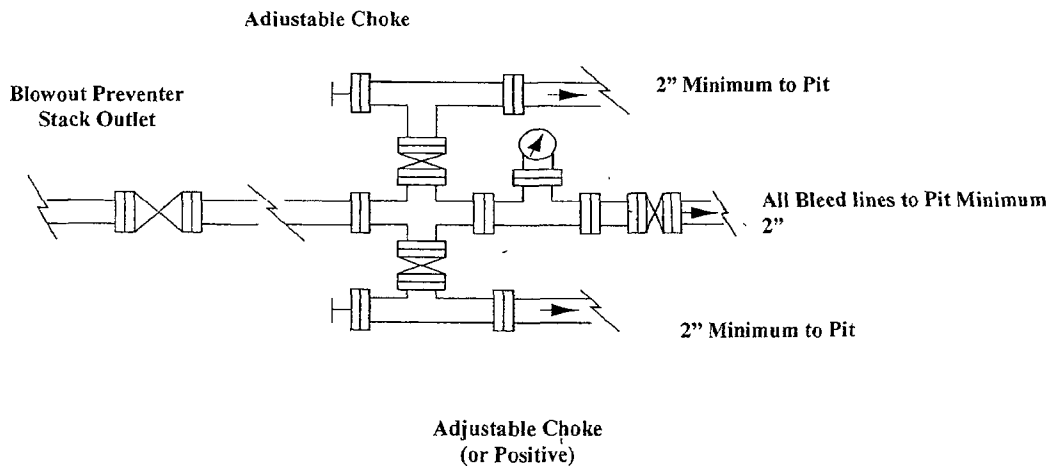
## Exhibit #9

### BOPE and Choke Schematic



Minimum 4" Nominal choke and kill lines

Choke Manifold Requirement (2000 psi WP)  
No Annular Required



**NOTES REGARDING THE BLOWOUT PREVENTERS**

**Master Drilling Plan  
Eddy County, New Mexico**

1. Drilling nipple to be so constructed that it can be removed without use of a welder through rotary table opening, with minimum I.D. equal to preventer bore.
2. Wear ring to be properly installed in head.
3. Blow out preventer and all fittings must be in good condition, 2000 psi WP minimum.
4. All fittings to be flanged.
5. Safety valve must be available on rig floor at all times with proper connections, valve to be full 2000 psi WP minimum.
6. All choke and fill lines to be securely anchored especially ends of choke lines.
7. Equipment through which bit must pass shall be at least as large as the diameter of the casing being drilled through.
8. Kelly cock on Kelly.
9. Extension wrenches and hands wheels to be properly installed.
10. Blow out preventer control to be located as close to driller's position as feasible.
11. Blow out preventer closing equipment to include minimum 40-gallon accumulator, two independent sources of pump power on each closing unit installation all API specifications.