

RECEIVED

SEP 21 2012

OCD Artesia

ATS-12-864

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

Split Estate

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

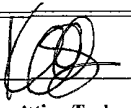
APPLICATION FOR PERMIT TO DRILL OR REENTER

| | | | |
|--|--|---|--|
| 1a Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER | | 5. Lease Serial No NMLC029415B | |
| 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 N/A | |
| 2 Name of Operator COG Operating LLC | | 7 If Unit or CA Agreement, Name and No N/A | |
| 3a. Address 550 W. Texas Ave., Suite 100 Midland, TX 79701 | | 8. Lease Name and Well No. Puckett 12 Federal #8H <38858> | |
| 3b. Phone No (include area code) 432-685-4384 | | 9. API Well No 30-015- 40737 | |
| 4. Location of Well (Report location clearly and in accordance with any State requirements *) At surface SHL: 190' FSL & 626' FEL, UL P At proposed prod. zone BHL: 330' FNL & 330' FEL, UL A | | 10. Field and Pool, or Exploratory Fren; Glorieta Yeso-East <87213> | |
| 11. Sec, T R. M. or Blk. and Survey or Area Sec 12, T17S R31E | | 12. County or Parish EDDY | |
| 13. State NM | | 14. Distance in miles and direction from nearest town or post office* 9 miles East of Loco Hills, NM | |
| 15. Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig. unit line, if any) 190' | | 16. No. of acres in lease 1920 | |
| 17. Spacing Unit dedicated to this well 160 | | 18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 791' | |
| 19. Proposed Depth TVD: 6600' MD: 11165' | | 20. BLM/BIA Bond No on file NMB000740; NMB000215 | |
| 21. Elevations (Show whether DF, KDB, RT, GL, etc) 3966' GL | | 22. Approximate date work will start* 08/31/2012 | |
| 23. Estimated duration 15 days | | 24 Attachments | |

UNORTHODOX
LOCATION

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

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

| | | |
|--|--|---------------------|
| 25. Signature  | Name (Printed/Typed) Kelly J. Holly | Date 06/19/2012 |
| Title Permitting Tech | | |
| Approved by (Signature) /s/ Don Peterson | Name (Printed/Typed) /s/ Don Peterson | Date SEP 19 2012 |
| Title FIELD MANAGER | Office CARLSBAD FIELD OFFICE | |

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 USC Section 1001 and Title 43 USC 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 APPROVALApproval Subject to General Requirements
& Special Stipulations Attached

Surface Use Plan
COG Operating, LLC
Puckett 12 Federal 8H
SL: 190' FSL & 626' FEL UL P
BHL: 330' FNL & 330' FEL UL A
Section 12, T-17-S, R31-E
Eddy County, New Mexico

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 2nd day of April, 2012.

Signed: Carl Bird

Printed Name: Carl Bird

Position: Drilling Engineer

Address: 550 W. Texas, Suite 1300, Midland, Texas 79701

Telephone: (432) 683-7443

Field Representative (if not above signatory): Same

E-mail: cbird@concho.com

DISTRICT I
1625 N French Dr., Hobbs, NM 88240
Phone (575) 393-6161 Fax: (575) 393-0720

DISTRICT II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

| | | |
|------------------------------------|-------------------------------------|---------------------------------------|
| API Number 30-015- 40737 | Pool Code 97213 | Pool Name Fren; Glorietà-Yeso-East |
| Property Code 38858 | Property Name PUCKETT 12 FEDERAL | Well Number 8H |
| OGRID No. 229137 | Operator Name COG OPERATING, LLC | Elevation 3966' |

Surface Location

| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| P | 12 | 17-S | 31-E | | 190 | SOUTH | 626 | EAST | EDDY |

Bottom Hole Location If Different From Surface

| UL or lot No | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|--------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| A | 12 | 17-S | 31-E | | 330 | NORTH | 330 | EAST | EDDY |

| Dedicated Acres | Joint or Infill | Consolidation Code | Order No. |
|-----------------|-----------------|--------------------|-----------|
| 160 | | | |

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

| | | | | | | | | | |
|---|------------------------------|------------------------------|---|------------------------------|---|------------------------------|---|------------------------------|--|
| <p>GEODETIC COORDINATES NAD 27 NME</p> <p>SURFACE LOCATION Y=670545.7 N X=658876.3 E</p> <p>LAT=32.842346° N LONG.=103.816038° W</p> <p>BOTTOM HOLE LOCATION Y=675308.5 N X=659145.2 E</p> <p>CORNER COORDINATES TABLE</p> <table> <tr> <td>Ⓐ</td> <td>- Y=675631.7 N, X=658153.1 E</td> </tr> <tr> <td>Ⓑ</td> <td>- Y=675640.7 N, X=659473.2 E</td> </tr> <tr> <td>Ⓒ</td> <td>- Y=670350.6 N, X=658184.2 E</td> </tr> <tr> <td>Ⓓ</td> <td>- Y=670360.5 N, X=659503.3 E</td> </tr> </table> <p>DETAIL</p> <p>PRODUCING AREA PROTECT AREA</p> <p>GRID AZ=03°13'51" HORIZ DIST=4771.7'</p> <p>SEE DETAIL</p> <p>190' 626'</p> | Ⓐ | - Y=675631.7 N, X=658153.1 E | Ⓑ | - Y=675640.7 N, X=659473.2 E | Ⓒ | - Y=670350.6 N, X=658184.2 E | Ⓓ | - Y=670360.5 N, X=659503.3 E | <p>OPERATOR CERTIFICATION</p> <p>I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p><i>Kacie Connally</i> 3-14-12 Signature Date</p> <p>Kacie Connally Printed Name</p> <p>Kconnally@concho.com E-mail Address</p> <p>SURVEYOR CERTIFICATION</p> <p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p>FEBRUARY 24, 2012</p> <p>Date of Survey</p> <p>Signature & Seal of Professional Surveyor:</p> <p><i>Ronald J. Eidson</i> 03/13/2012 Certificate Number</p> <p>Gary G. Eidson 12641 Ronald J. Eidson 3239</p> <p>AF JWSC W.O. 11.11.2407</p> |
| Ⓐ | - Y=675631.7 N, X=658153.1 E | | | | | | | | |
| Ⓑ | - Y=675640.7 N, X=659473.2 E | | | | | | | | |
| Ⓒ | - Y=670350.6 N, X=658184.2 E | | | | | | | | |
| Ⓓ | - Y=670360.5 N, X=659503.3 E | | | | | | | | |

ATTACHMENT TO FORM 3160-3
COG Operating, LLC
PUCKETT 12 FEDERAL #8H
SHL: 190' FSL & 626' FEL, Unit P
BHL: 330' FNL & 330' FEL, Unit A
Sec 12, T17S, R31E
Eddy County, NM

1. Proration Unit Spacing: 160 Acres
2. Ground Elevation: 3966'
3. Proposed Depths: Horizontal TVD = 6600', MD = 11165'

Estimated tops of geological markers:

| | |
|--------------|---------|
| Quaternary | Surface |
| Rustler | 682' |
| Top of Salt | 900' |
| Base of Salt | 1923' |
| Yates | 2028' |
| Seven Rivers | 2356' |
| Queen | 2980' |
| Grayburg | 3415' |
| San Andres | 3739' |
| Glorieta | 5247' |
| Paddock | 5317' |
| Blaine | 5745' |
| Tubb | 6700' |

5. Possible mineral bearing formations:

| | | |
|------------|-------|-------------|
| Water Sand | 150' | Fresh Water |
| Grayburg | 3415' | Oil/Gas |
| San Andres | 3739' | Oil/Gas |
| Glorieta | 5247' | Oil/Gas |
| Paddock | 5317' | Oil/Gas |
| Blaine | 5745' | Oil/Gas |
| Tubb | 6700' | Oil/Gas |

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to 750' and circulating cement back to the surface will protect the surface fresh water sand. The Salt Section will be protected by setting 9 5/8" casing to 2000' 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 7" x 5 1/2" production casing back 200' into the intermediate casing (although cement volume is actually 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

See
COA

ATTACHMENT TO FORM 3160-3
COG Operating, LLC
PUCKETT 12 FEDERAL #8H
Page 2 of 4

6. Casing Program - Proposed

| <u>Hole size</u> | <u>Interval</u> | <u>OD of Casing</u> | <u>Weight</u> | <u>Cond.</u> | <u>Collar</u> | <u>Grade</u> |
|---|-----------------|---------------------|---------------|--------------|---------------|---------------------|
| 17-1/2" | 0' - +/-750' | 13-3/8" | 48# | New | STC | H-40 or Hybrid J-55 |
| Collapse sf - 2.32, Burst sf - 5.22, Tension sf - 8.94 | | | | | | |
| 12-1/4" | 0' - +/-2000' | 9-5/8" | 36# | New | STC | J/K-55 |
| Collapse sf - 2.13, Burst sf - 3.72, Tension sf - 6.29 | | | | | | |
| 8-3/4" x 7 7/8" | 0' - 11165' | 7" x 5-1/2" | 26#/17# | New | LTC | L-80 |
| 7" Csg - Collapse sf - 1.87, Burst sf - 1.65, Tension sf - 3.26 | | | | | | |
| 5 1/2" Csg - Collapse sf - 2.01, Burst sf - 1.67, Tension sf - 3.10 | | | | | | |

Production string will be a tapered string with 7" 26# L-80 LTC ran from surface to kick off point and then crossed over to 5 1/2" 17# L-80 LTC.

7. Cement Program * See COA

13 3/8" Surface Csg: Set at +/- 750'MD, Lead Slurry: 450 sx Class "C" w/ 4% Gel, 2% CaCl, .25 lb/sx CelloFlake, yield 1.75 ft³/sx, wt. 13.5 ppg. Tail Slurry: 200sx Class "C" w/ 2% CaCl₂ & 0.25 lb/sx CelloFlake, yield 1.32 ft³/sx, wt. 14.8 ppg. 102% excess, calculated to surface.

9 5/8" Intrmd. Csg: Set at +/- 2000'MD.

Option #1: Single Stage (TD to Surface): Lead Slurry: 500 sx 50:50:10:C:Poz:Gel w/ 5% salt, 5 pps LCM-1, 0.25 pps CF, yield 2.45 cu.ft./sk., 11.8 ppg. Tail Slurry: 200 sx Class "C" w/ 2% CaCl₂, yield 1.32 cu.ft./sk., wt. 14.8 ppg. 208% excess, calculated to surface.

Option #2: Multi Stage: Stage 1 (TD to DV Tool @ 800'): 500 sx Class "C" w/ 2% CaCl₂, yield 1.32 cu.ft./sk., wt. 14.8 ppg. 17% excess. Stage 2 (DV Tool to surface): 250 sx 50:50:10:C:Poz:Gel w/ 5% salt, 5 pps LCM-1, 0.25 pps CF, yield 2.45 cu.ft./sk., wt. 14.8 ppg calculated to surface, 225% excess; assumption for tool is lost circulation. Multi stage tool to be set at approximately, depending on hole conditions, 800' (50' below the surface casing). Cement volumes will be adjusted proportionately for depth changes of multi stage tool.

7" x 5 1/2" Production Csg: Set at +/- 11165'MD.

Option#1: Single Stage (KOP to surface): Lead Slurry: 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 2.01 cu.ft./sk., wt. 12.5 ppg. Tail Slurry: 400 sx 50:50:2:C:Poz:Gel w/ 5% salt, 3 pps LCM, 0.6% SMS, 1% FL-25, 1% BA-58, 0.125 pps CF, 0.3% FL-52A; yield 1.37 cu.ft./sk., wt. 14.0 ppg. DV Tool and ECP to be set at kick off point with 7" cemented to surface and 5 1/2" run with +/- 18 isolation packers and sliding sleeves in uncemented lateral. 97% excess in open hole, from kick off point, calculated to surface. **This is a minimum volume and will be adjusted up after caliper is run.**

Option #2: Multi Stage (DV Tool & ECP (external csg. packer)@ KOP and DV Tool at 3000'): Stage 1: (KOP To DV Tool at 3000'): 700 sx 50:50:2:C:Poz:Gel w/ 5% salt, 3 pps LCM, 0.6% SMS, 1% FL-25, 1% BA-58, .125 pps CF, 0.3% FL-52A; yield 1.37 cu.ft./sk., wt. 14.00 ppg. 104% excess. **This is a minimum volume and will be adjusted up after caliper is run.** Stage 2 (DV Tool to surface) Lead Slurry: 300 sx 50:50:2:C:Poz:Gel w/ 5% salt, 3 pps LCM, 0.6% SMS, 1% FL-25, 1% BA-58, 0.125 pps CF, 0.3% FL-52A; yield 1.37 cu.ft./sk., wt. 14.0 ppg. Tail Slurry: 300 sx Class C w/ 0.3% R-3 + 1.5% CD-32, yield 1.02 cu.ft./sk., wt. 16.8 ppg. 155% excess calculated back to surface (no need for excess in casing overlap). **This is a minimum volume and will be adjusted up after caliper is run.**

ATTACHMENT TO FORM 3160-3
COG Operating, LLC
PUCKETT 12 FEDERAL #8H
Page 3 of 4

You will note that in option #2 the Multi stage tool (DV Tool) will be set at approximately 3000', depending on hole conditions. Cement volumes will be adjusted proportionately for depth changes of multi stage tool; assumption for use of tool is water flow.

8. Pressure Control Equipment:

** See COA*

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" BOP will be used during the drilling of the well. A 13 5/8" permanent casing head will be installed on the 13 3/8" casing. The BOP will be nipped up on the 13 5/8" permanent casing head and tested to 2000 psi. After setting 9-5/8", permanent "B section" well head will be installed and the BOP will then be nipped up on the permanent B section well head 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.

9. Proposed Mud Circulating System

| Interval | Mud Wt. | Visc. | FL | Type Mud System |
|---------------|---------|-------|----|---|
| 0' - 750' | 8.5 | 28 | NC | Fresh water native mud w/ paper for seepage and sweeps. Lime for PH. |
| 750'- 2000' | 10 | 30 | NC | Brine mud, lime for PH and paper for seepage and sweeps. |
| 2000'- 11165' | 9.1 | 29 | NC | Drill section with fresh water/cut brine circulating the reserve utilizing periodic sweeps of paper as needed for seepage control and solids removal. |

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

10. Production Hole Drilling Summary:

Drill 8 3/4" hole and kick off at +/- 6123', building curve over +/- 750' to horizontal at 6600' TVD. Drill 7 7/8" lateral section in a northerly direction for +/-4763' lateral to TD at +/-11165' MD, 6600' TVD. Run 7" x 5-1/2" production casing. 7" to be ran from surface to kickoff point and changed over to 5 1/2" with DV Tool and ECP at kickoff point. 5 1/2" casing will be ran from kickoff point to td and isolation packers set throughout lateral. 7" to be cemented from kickoff point to surface.

11. 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.

ATTACHMENT TO FORM 3160-3
COG Operating, LLC
PUCKETT 12 FEDERAL #8H
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12. Logging, Testing and Coring Program:

- See COA.*
- A. No electric logs to be run.
 - B. The mud logging program will consist of lagged 10' samples from intermediate casing point to T.D. in vertical pilot hole and from Kick off point to TD in Horizontal hole.
 - C. Drill Stem test is not anticipated.
 - D. No conventional coring is anticipated.
 - E. Further testing procedures will be determined after the 7" x 5 1/2" production casing has been cemented at TD based on drill shows and log evaluation.

13. Abnormal Conditions, Pressures, Temperatures and Potential Hazards:

No abnormal pressures or temperatures are anticipated. The estimated bottom hole temperature at TD of pilot hole is 105 degrees and estimated maximum bottom hole pressure is 2970 psig. Measurable gas volumes or Hydrogen Sulfide levels have not been encountered during drilling operations in this area, however an H2S plan is attached to the Drilling Program. No major loss of circulation zones has been reported in offsetting wells.

14. Anticipated Starting Date

Drilling operations will commence approximately on June 30, 2012 with drilling and completion operations lasting approximately 90 days.

COG Operating LLC

Eddy County, NM

Puckett 12 Federal 8H

Puckett 12 Federal 8H

Wellbore #1

Surface: 190' FSL, 626' FEL, Sec 12, T17S, R31E, Unit P

BHL: 330' FNL, 330' FEL, Sec 12, T17S, R31E, Unit A

PP: 330' FSL, 624' FEL, Sec 12, T17S, R31E, Unit P

Plan: Plan #1

Standard Planning Report

12 April, 2012

Crescent Directional Drilling

Planning Report

Database: R5000 Houston DB
Company: COG Operating LLC
Project: Eddy County, NM
Site: Puckett 12 Federal 8H
Well: Puckett 12 Federal 8H
Wellbore: Wellbore #1
Design: Plan #1

Local Co-ordinate Reference: Site Puckett 12 Federal 8H
TVD Reference: WELL @ 3984.00ft (Original Well Elev)
MD Reference: WELL @ 3984.00ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

| | | | |
|--------------------|--------------------------------------|----------------------|----------------|
| Project | Eddy 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 | Puckett 12 Federal 8H | | |
| Site Position: | | Northing: | 670,545 70 ft |
| From: | Map | Easting: | 658,876 30 ft |
| Position Uncertainty: | 0 00 ft | Slot Radius: | 13 200 in |
| | | Latitude: | 32° 50' 32 43 N |
| | | Longitude: | 103° 48' 57 75 W |
| | | Grid Convergence: | 0.28 ° |

| | | | |
|-----------------------------|-----------------------|----------------------------|------------------------------------|
| Well | Puckett 12 Federal 8H | | |
| Well Position | +N/-S | 0 00 ft | Northing: 670,545 70 ft |
| | +E/-W | 0 00 ft | Easting: 658,876 30 ft |
| Position Uncertainty | 0 00 ft | Wellhead Elevation: | Latitude: 32° 50' 32 43 N |
| | | | Longitude: 103° 48' 57 75 W |
| | | | Ground Level: 3,966 00 ft |

| | | | | | |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| Wellbore | Wellbore #1 | | | | |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | IGRF2010 | 4/3/2012 | 7 65 | 60 70 | 48,877 |

| | | | | |
|--------------------------|-------------------------|-------------------|----------------------|----------------------|
| Design | Plan #1 | | | |
| Audit Notes: | | | | |
| Version: | Phase: | PLAN | Tie On Depth: | 0 00 |
| Vertical Section: | Depth From (TVD) | +N/-S (ft) | +E/-W (ft) | Direction (°) |
| | 0 00 | 0 00 | 0 00 | 3 23 |

| Plan Sections | | | | | | | | | | |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|----------------------|---------------------|---------|----------------------|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) | TFO (°) | Target |
| 0 00 | 0 00 | 0 00 | 0 00 | 0 00 | 0 00 | 0 00 | 0 00 | 0 00 | 0 00 | |
| 6,122.54 | 0 00 | 0 00 | 6,122 54 | 0 00 | 0 00 | 0 00 | 0 00 | 0 00 | 0 00 | |
| 6,872.54 | 90 00 | 3 23 | 6,600 00 | 476 71 | 26 91 | 12 00 | 12 00 | 0 00 | 3 23 | |
| 11,165 46 | 90 00 | 3 23 | 6,600 00 | 4,762 80 | 268 90 | 0 00 | 0 00 | 0 00 | 0 00 | PBHL (Puckett 12 Fed |

Crescent Directional Drilling

Planning Report

Database: R5000 Houston DB
 Company: COG Operating LLC
 Project: Eddy County, NM
 Site: Puckett 12 Federal 8H
 Well: Puckett 12 Federal 8H
 Wellbore: Wellbore #1
 Design: Plan #1

Local Co-ordinate Reference: Site Puckett 12 Federal 8H
 TVD Reference: WELL @ 3984 00ft (Original Well Elev)
 MD Reference: WELL @ 3984 00ft (Original Well Elev)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

Planned Survey

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|--|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------|
| 6,122.54 | 0 00 | 0 00 | 6,122.54 | 0 00 | 0.00 | 0 00 | 0 00 | 0 00 | 0 00 |
| KOP - Start Build @ 12.00°/100' | | | | | | | | | |
| 6,200.00 | 9 30 | 3 23 | 6,199.66 | 6.26 | 0 35 | 6 27 | 12 00 | 12.00 | 0 00 |
| 6,300.00 | 21 30 | 3 23 | 6,295.94 | 32.55 | 1.84 | 32 60 | 12 00 | 12 00 | 0 00 |
| 6,400.00 | 33 30 | 3 23 | 6,384.65 | 78.25 | 4 42 | 78 38 | 12 00 | 12 00 | 0 00 |
| 6,496.65 | 44 89 | 3 23 | 6,459.53 | 139.00 | 7 85 | 139 22 | 12 00 | 12 00 | 0.00 |
| PP @ 6496.65 MD, 6459.53 TVD, 44.89 INC, 3.23 AZ, 139.22 VS | | | | | | | | | |
| 6,500.00 | 45.30 | 3.23 | 6,461.89 | 141.37 | 7 98 | 141.59 | 12 00 | 12.00 | 0 00 |
| 6,600.00 | 57 30 | 3 23 | 6,524.31 | 219.14 | 12.37 | 219 49 | 12 00 | 12 00 | 0 00 |
| 6,700.00 | 69 30 | 3.23 | 6,569.16 | 308.17 | 17 40 | 308 66 | 12 00 | 12 00 | 0 00 |
| 6,800.00 | 81 30 | 3 23 | 6,594.50 | 404.56 | 22.84 | 405 21 | 12 00 | 12 00 | 0 00 |
| 6,872.54 | 90 00 | 3 23 | 6,600.00 | 476.71 | 26.91 | 477 46 | 12 00 | 12 00 | 0 00 |
| Landing Point - Hold @ 90.00° INC, 3.23° AZ | | | | | | | | | |
| 6,900.00 | 90 00 | 3 23 | 6,600.00 | 504.13 | 28 46 | 504 93 | 0 00 | 0 00 | 0 00 |
| 7,000.00 | 90 00 | 3 23 | 6,600.00 | 603.97 | 34 10 | 604 93 | 0 00 | 0 00 | 0 00 |
| 7,100.00 | 90 00 | 3 23 | 6,600.00 | 703.81 | 39 74 | 704 93 | 0 00 | 0 00 | 0 00 |
| 7,200.00 | 90 00 | 3 23 | 6,600.00 | 803.65 | 45 37 | 804 93 | 0 00 | 0 00 | 0 00 |
| 7,300.00 | 90 00 | 3 23 | 6,600.00 | 903.49 | 51.01 | 904 93 | 0 00 | 0 00 | 0 00 |
| 7,400.00 | 90 00 | 3 23 | 6,600.00 | 1,003.33 | 56 65 | 1,004 93 | 0 00 | 0 00 | 0 00 |
| 7,500.00 | 90 00 | 3 23 | 6,600.00 | 1,103.17 | 62 28 | 1,104 93 | 0 00 | 0 00 | 0 00 |
| 7,600.00 | 90 00 | 3.23 | 6,600.00 | 1,203.01 | 67 92 | 1,204.93 | 0 00 | 0 00 | 0 00 |
| 7,700.00 | 90 00 | 3 23 | 6,600.00 | 1,302.85 | 73 56 | 1,304 93 | 0 00 | 0 00 | 0 00 |
| 7,800.00 | 90 00 | 3.23 | 6,600.00 | 1,402.70 | 79 19 | 1,404 93 | 0 00 | 0 00 | 0 00 |
| 7,900.00 | 90 00 | 3 23 | 6,600.00 | 1,502.54 | 84 83 | 1,504 93 | 0 00 | 0 00 | 0 00 |
| 8,000.00 | 90 00 | 3 23 | 6,600.00 | 1,602.38 | 90 47 | 1,604.93 | 0 00 | 0 00 | 0 00 |
| 8,100.00 | 90 00 | 3 23 | 6,600.00 | 1,702.22 | 96 10 | 1,704 93 | 0 00 | 0 00 | 0 00 |
| 8,200.00 | 90 00 | 3 23 | 6,600.00 | 1,802.06 | 101 74 | 1,804 93 | 0 00 | 0 00 | 0 00 |
| 8,300.00 | 90 00 | 3 23 | 6,600.00 | 1,901.90 | 107 38 | 1,904.93 | 0 00 | 0 00 | 0 00 |
| 8,400.00 | 90 00 | 3.23 | 6,600.00 | 2,001.74 | 113 02 | 2,004 93 | 0 00 | 0 00 | 0 00 |
| 8,500.00 | 90 00 | 3 23 | 6,600.00 | 2,101.58 | 118 65 | 2,104 93 | 0 00 | 0 00 | 0 00 |
| 8,600.00 | 90 00 | 3 23 | 6,600.00 | 2,201.42 | 124 29 | 2,204 93 | 0 00 | 0 00 | 0 00 |
| 8,700.00 | 90 00 | 3 23 | 6,600.00 | 2,301.26 | 129 93 | 2,304.93 | 0 00 | 0 00 | 0 00 |
| 8,800.00 | 90 00 | 3 23 | 6,600.00 | 2,401.11 | 135 56 | 2,404 93 | 0 00 | 0 00 | 0 00 |
| 8,900.00 | 90 00 | 3 23 | 6,600.00 | 2,500.95 | 141 20 | 2,504 93 | 0 00 | 0 00 | 0 00 |
| 9,000.00 | 90 00 | 3 23 | 6,600.00 | 2,600.79 | 146 84 | 2,604 93 | 0 00 | 0 00 | 0 00 |
| 9,100.00 | 90.00 | 3 23 | 6,600.00 | 2,700.63 | 152 47 | 2,704 93 | 0 00 | 0 00 | 0 00 |
| 9,200.00 | 90.00 | 3 23 | 6,600.00 | 2,800.47 | 158 11 | 2,804.93 | 0 00 | 0 00 | 0 00 |
| 9,300.00 | 90 00 | 3 23 | 6,600.00 | 2,900.31 | 163 75 | 2,904 93 | 0 00 | 0 00 | 0 00 |
| 9,400.00 | 90 00 | 3 23 | 6,600.00 | 3,000.15 | 169 38 | 3,004.93 | 0 00 | 0 00 | 0 00 |
| 9,500.00 | 90 00 | 3 23 | 6,600.00 | 3,099.99 | 175 02 | 3,104 93 | 0 00 | 0 00 | 0 00 |
| 9,600.00 | 90 00 | 3 23 | 6,600.00 | 3,199.83 | 180 66 | 3,204.93 | 0 00 | 0 00 | 0 00 |
| 9,700.00 | 90 00 | 3 23 | 6,600.00 | 3,299.67 | 186 29 | 3,304.93 | 0 00 | 0 00 | 0 00 |
| 9,800.00 | 90 00 | 3 23 | 6,600.00 | 3,399.52 | 191 93 | 3,404 93 | 0 00 | 0 00 | 0 00 |
| 9,900.00 | 90 00 | 3 23 | 6,600.00 | 3,499.36 | 197 57 | 3,504.93 | 0 00 | 0 00 | 0 00 |
| 10,000.00 | 90 00 | 3 23 | 6,600.00 | 3,599.20 | 203 20 | 3,604 93 | 0 00 | 0 00 | 0 00 |
| 10,100.00 | 90 00 | 3 23 | 6,600.00 | 3,699.04 | 208.84 | 3,704.93 | 0 00 | 0 00 | 0 00 |
| 10,200.00 | 90 00 | 3 23 | 6,600.00 | 3,798.88 | 214 48 | 3,804 93 | 0 00 | 0 00 | 0 00 |
| 10,300.00 | 90 00 | 3 23 | 6,600.00 | 3,898.72 | 220 12 | 3,904 93 | 0 00 | 0 00 | 0 00 |
| 10,400.00 | 90 00 | 3 23 | 6,600.00 | 3,998.56 | 225 75 | 4,004 93 | 0 00 | 0 00 | 0 00 |
| 10,500.00 | 90 00 | 3 23 | 6,600.00 | 4,098.40 | 231.39 | 4,104 93 | 0 00 | 0 00 | 0 00 |
| 10,600.00 | 90 00 | 3 23 | 6,600.00 | 4,198.24 | 237 03 | 4,204 93 | 0 00 | 0 00 | 0 00 |
| 10,700.00 | 90 00 | 3 23 | 6,600.00 | 4,298.09 | 242 66 | 4,304 93 | 0 00 | 0 00 | 0 00 |
| 10,800.00 | 90 00 | 3.23 | 6,600.00 | 4,397.93 | 248 30 | 4,404 93 | 0 00 | 0 00 | 0 00 |

Crescent Directional Drilling

Planning Report

Database: R5000 Houston DB
Company: COG Operating LLC
Project: Eddy County, NM
Site: Puckett 12 Federal 8H
Well: Puckett 12 Federal 8H
Wellbore: Wellbore #1
Design: Plan #1

Local Co-ordinate Reference: Site Puckett 12 Federal 8H
TVD Reference: WELL @ 3984.00ft (Original Well Elev)
MD Reference: WELL @ 3984.00ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------|
| 10,900.00 | 90.00 | 3.23 | 6,600.00 | 4,497.77 | 253.94 | 4,504.93 | 0.00 | 0.00 | 0.00 |
| 11,000.00 | 90.00 | 3.23 | 6,600.00 | 4,597.61 | 259.57 | 4,604.93 | 0.00 | 0.00 | 0.00 |
| 11,100.00 | 90.00 | 3.23 | 6,600.00 | 4,697.45 | 265.21 | 4,704.93 | 0.00 | 0.00 | 0.00 |
| 11,165.46 | 90.00 | 3.23 | 6,600.00 | 4,762.80 | 268.90 | 4,770.38 | 0.00 | 0.00 | 0.00 |

TD @ 11165.46' MD, 6600.00' TVD - PBHL (Puckett 12 Federal 8H Plan 1)

Design Targets

| Target Name | Dip Angle (°) | Dip Dir. (°) | TVD (ft) | +N/-S (ft) | +E/-W (ft) | Northing (ft) | Easting (ft) | Latitude | Longitude |
|---------------------------|---------------|--------------|----------|------------|------------|---------------|--------------|-----------------|------------------|
| - hit/miss target | | | | | | | | | |
| - Shape | | | | | | | | | |
| PBHL (Puckett 12 Feder | 0.00 | 0.00 | 6,600.00 | 4,762.80 | 268.90 | 675,308.50 | 659,145.20 | 32° 51' 19.55 N | 103° 48' 54.33 W |
| - plan hits target center | | | | | | | | | |
| - Point | | | | | | | | | |

Plan Annotations

| Measured Depth (ft) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Comment |
|---------------------|---------------------|------------|------------|---|
| 6,122.54 | 6,122.54 | 0.00 | 0.00 | KOP - Start Build @ 12.00°/100' |
| 6,496.65 | 6,459.53 | 139.00 | 7.85 | PP @ 6496.65 MD, 6459.53 TVD, 44.89 INC, 3.23 AZ, 139.22 VS |
| 6,872.54 | 6,600.00 | 476.71 | 26.91 | Landing Point - Hold @ 90.00° INC, 3.23° AZ |
| 11,165.46 | 6,600.00 | 4,762.80 | 268.90 | TD @ 11165.46' MD, 6600.00' TVD |



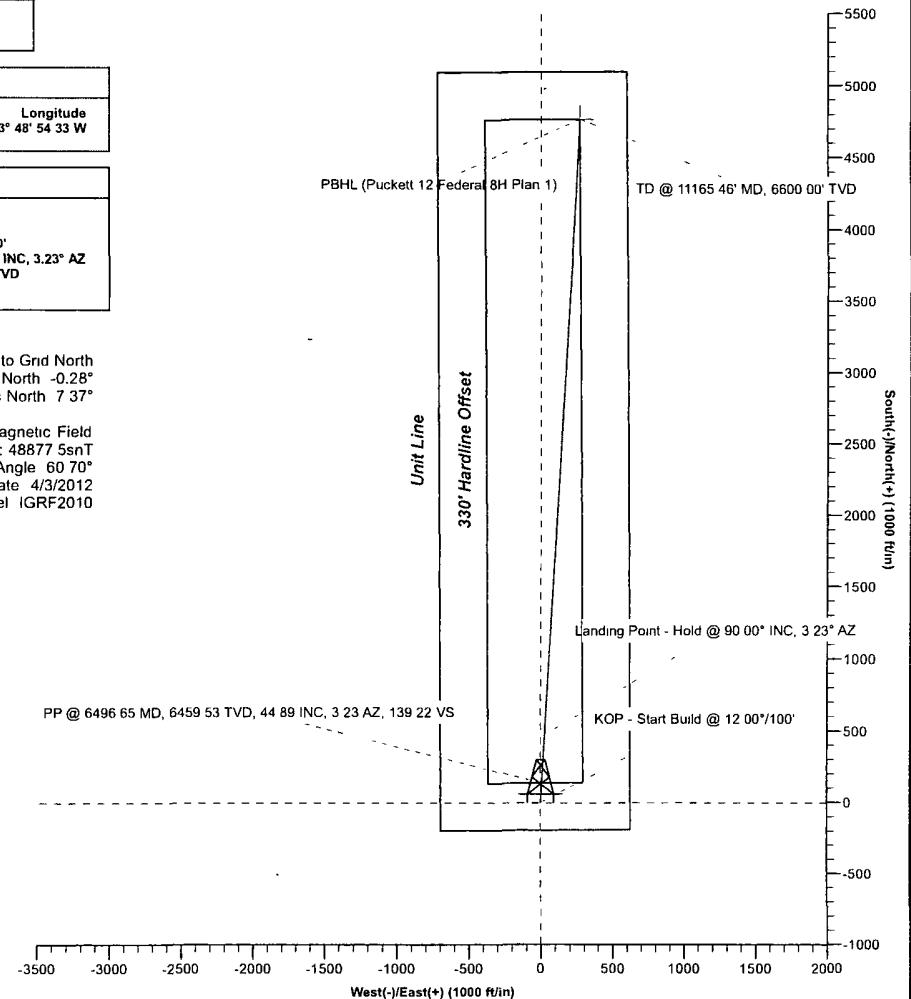
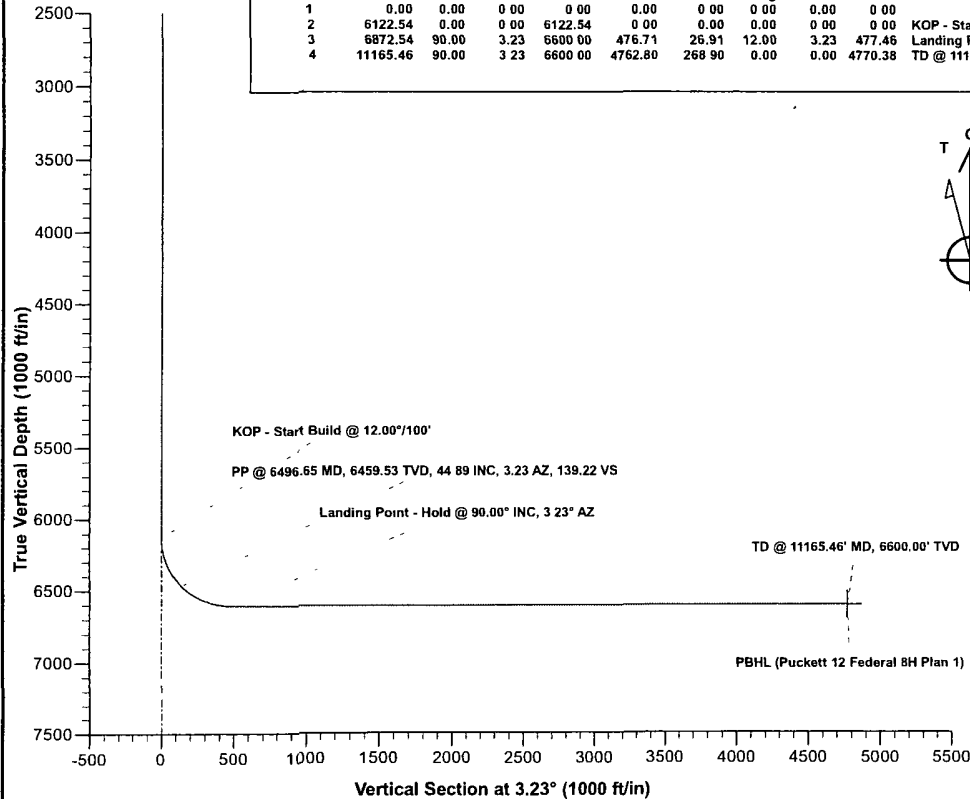
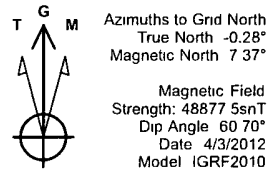
**COG Operating LLC
Puckett 12 Federal 8H
Eddy County, NM
Plan #1**



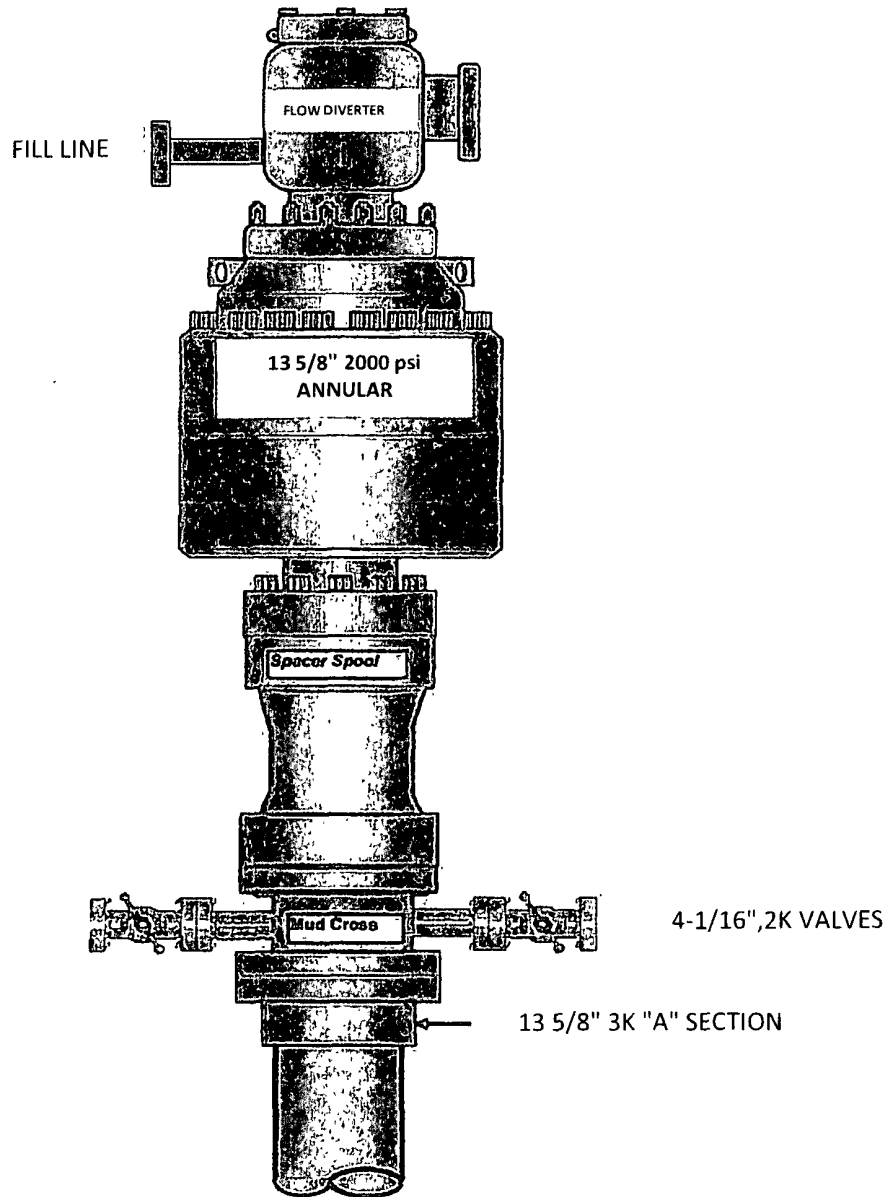
| Surface Location Ground Elev: 3966.00 WELL @ 3984.00ft (Original Well Elev) | | | | | |
|--|-------|-----------|-----------|-----------------|------------------|
| +N/-S | +E/-W | Northing | Easting | Latitude | Longitude |
| 0.00 | 0.00 | 670545.70 | 658876.30 | 32° 50' 32.43 N | 103° 48' 57.75 W |

| TARGET DETAILS | | | | | | | |
|-------------------------------------|---------|---------|--------|-----------|-----------|-----------------|------------------|
| Name | TVD | +N/-S | +E/-W | Northing | Easting | Latitude | Longitude |
| PBHL (Puckett 12 Federal 8H Plan 1) | 6600.00 | 4762.80 | 268.90 | 675308.50 | 659145.20 | 32° 51' 19.55 N | 103° 48' 54.33 W |

| SECTION DETAILS | | | | | | | | | | | |
|-----------------|----------|-------|------|---------|---------|--------|-------|-------|---------|---|--|
| Sec | MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | VSect | Annotation | |
| 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | KOP - Start Build @ 12.00°/100' | |
| 2 | 6122.54 | 0.00 | 0.00 | 6122.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | KOP - Start Build @ 12.00°/100' | |
| 3 | 6872.54 | 90.00 | 3.23 | 6600.00 | 476.71 | 26.91 | 12.00 | 3.23 | 477.46 | Landing Point - Hold @ 90.00° INC, 3.23° AZ | |
| 4 | 11165.46 | 90.00 | 3.23 | 6600.00 | 4762.80 | 268.90 | 0.00 | 0.00 | 4770.38 | TD @ 11165.46' MD, 6600.00' TVD | |



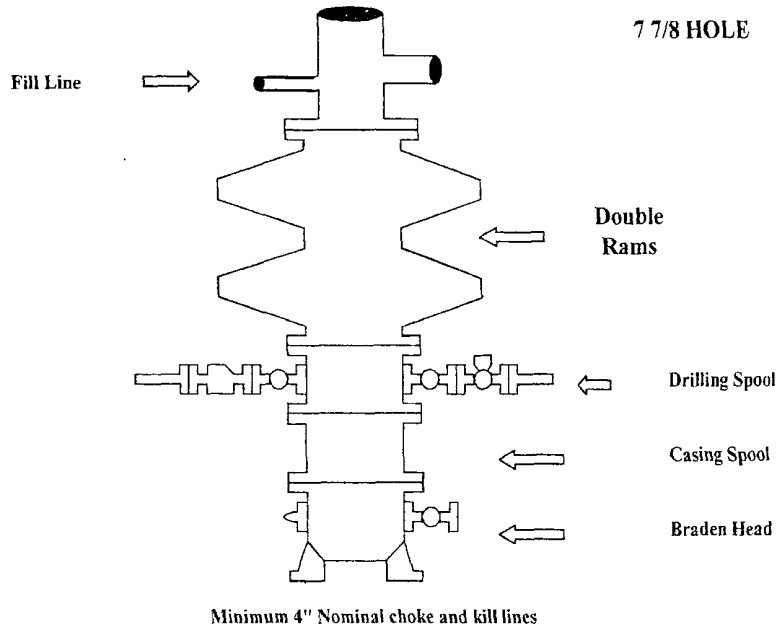
13 5/8" 2K ANNULAR



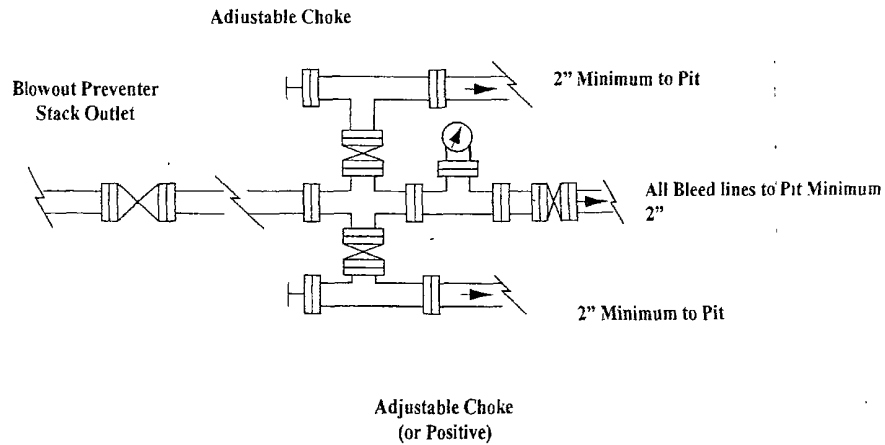
COG Operating LLC

Exhibit #9

BOPE and Choke Schematic



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.

Closed Loop Operation & Maintenance Procedure

All drilling fluid circulated over shaker(s) with cuttings discharged into roll off container.

Fluid and fines below shaker(s) are circulated with transfer pump through centrifuge(s) or solids separator with cuttings and fines discharged into roll off container.

Fluid is continuously re-circulated through equipment with polymer added to aid separation of cutting fines.

Roll off containers are lined and de-watered with fluids re-circulated into system.

Additional tank is used to capture unused drilling fluid or cement returns from casing jobs.

This equipment will be maintained 24 hrs./day by solids control personnel and or rig crews that stay on location.

Cuttings will be hauled to either:

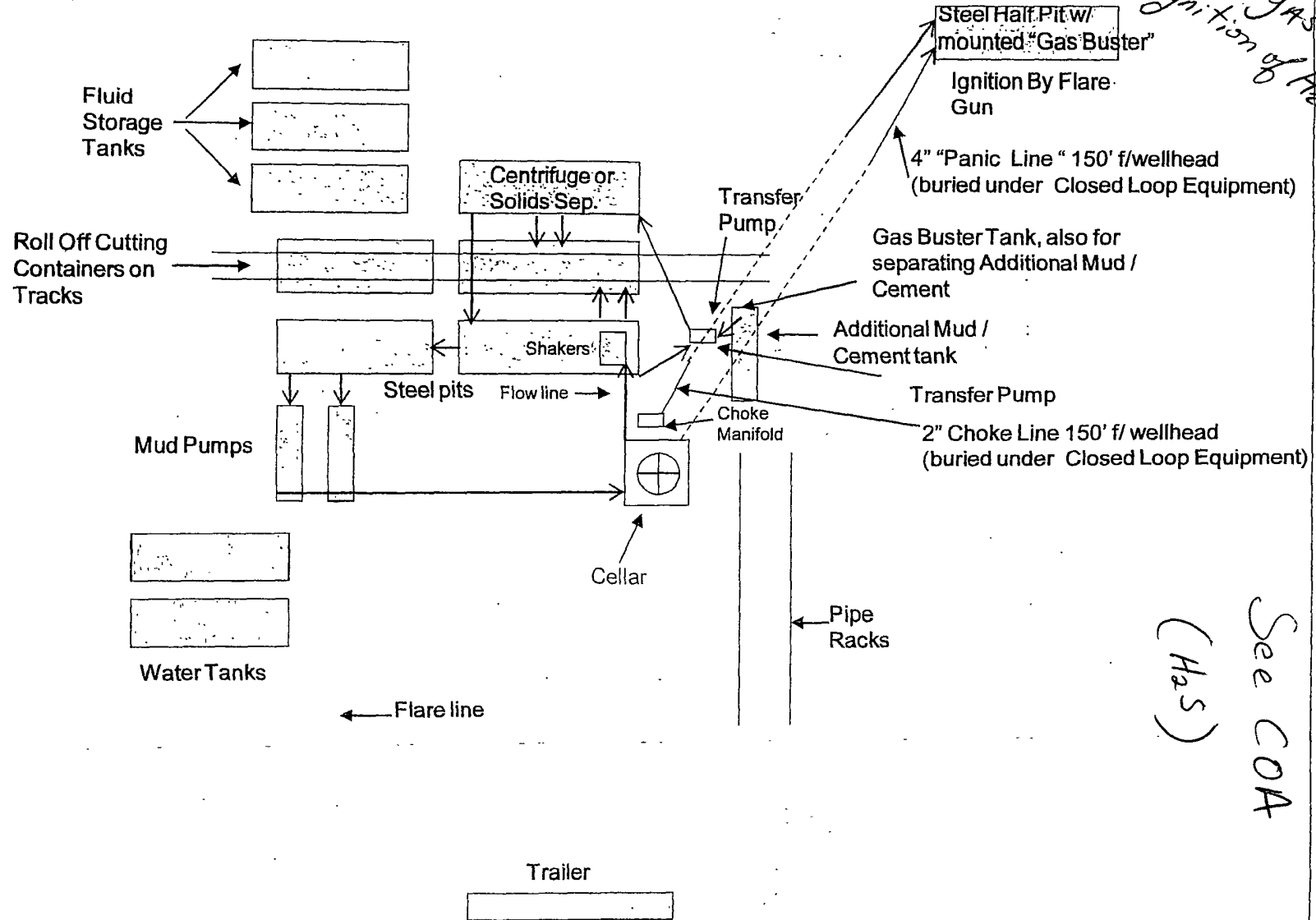
CRI (permit number R9166)

or

GMI (permit number 711-019-001)

dependent upon which rig is available to drill this well.

COG Operating LLC
Closed Loop Equipment Diagram



COG Operating LLC

Hydrogen Sulfide Drilling Operation Plan

I. HYDROGEN SULFIDE TRAINING

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

1. The hazards and characteristics of hydrogen sulfide (H₂S)
2. The proper use and maintenance of personal protective equipment and life support systems.
3. The proper use of H₂S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
4. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

1. The effects of H₂S on metal components. If high tensile tubular are to be used, personnel will be trained in their special maintenance requirements.
2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
3. The contents and requirements of the H₂S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H₂S zone (within 3 days or 500 feet) and weekly H₂S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H₂S Drilling Operations Plan and the Public Protection Plan. **The concentrations of H₂S of wells in this area from surface to TD are low enough that a contingency plan is not required.**

II. H2S SAFETY EQUIPMENT AND SYSTEMS

Note: All H2S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonable expected to contain H2S.

1. Well Control Equipment:

- A. Flare line.
- B. Choke manifold.
- C. Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.
- D. Auxiliary equipment may include if applicable: annular preventer & rotating head.

2. Protective equipment for essential personnel:

- A. Mark II Survive air 30-minute units located in the doghouse and at briefing areas, as indicated on well site diagram.

3. H2S detection and monitoring equipment:

- A. 1 portable H2S monitors positioned on location for best coverage and response. These units have warning lights and audible sirens when H2S levels of 20 PPM are reached.

4. Visual warning systems:

- A. Wind direction indicators as shown on well site diagram (Exhibit #8).
- B. Caution/Danger signs (Exhibit #7) shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used, when appropriate. See example attached.

5. Mud program:

- A. The mud program has been designed to minimize the volume of H2S circulated to surface. Proper mud weight, safe drilling practices, and the use of H2S scavengers will minimize hazards when penetrating H2S bearing zones.
-

6. Metallurgy:

- A. All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H₂S service.
- B. All elastomers used for packing and seals shall be H₂S trim.

7. Communication:

- A. Radio communications in company vehicles including cellular telephone and 2-way radio.
- B. Land line (telephone) communication at Office.

8. Well testing:

- A. Drill stem testing will be performed with a minimum number of personnel in the immediate vicinity, which are necessary to safely and adequately conduct the test. The drill stem testing will be conducted during daylight hours and formation fluids will not be flowed to the surface. All drill-stem-testing operations conducted in an H₂S environment will use the closed chamber method of testing.
- B. There will be no drill stem testing.

EXHIBIT #7

WARNING
YOU ARE ENTERING AN H₂S
AUTHORIZED PERSONNEL ONLY

- 1. BEARDS OR CONTACT LENSES NOT ALLOWED
- 2. HARD HATS REQUIRED
- 3. SMOKING IN DESIGNATED AREAS ONLY
- 4. BE WIND CONSCIOUS AT ALL TIMES
- 5. CHECK WITH COG OPERATING FOREMAN AT

COG OPERATING LLC
1-432-683-7443
1-575-746-2010

EDDY COUNTY EMERGENCY NUMBERS

ARTESIA FIRE DEPT. 575-746-5050
ARTESIA POLICE DEPT. 575-746-5000
EDDY CO. SHERIFF DEPT. 575-746-9888

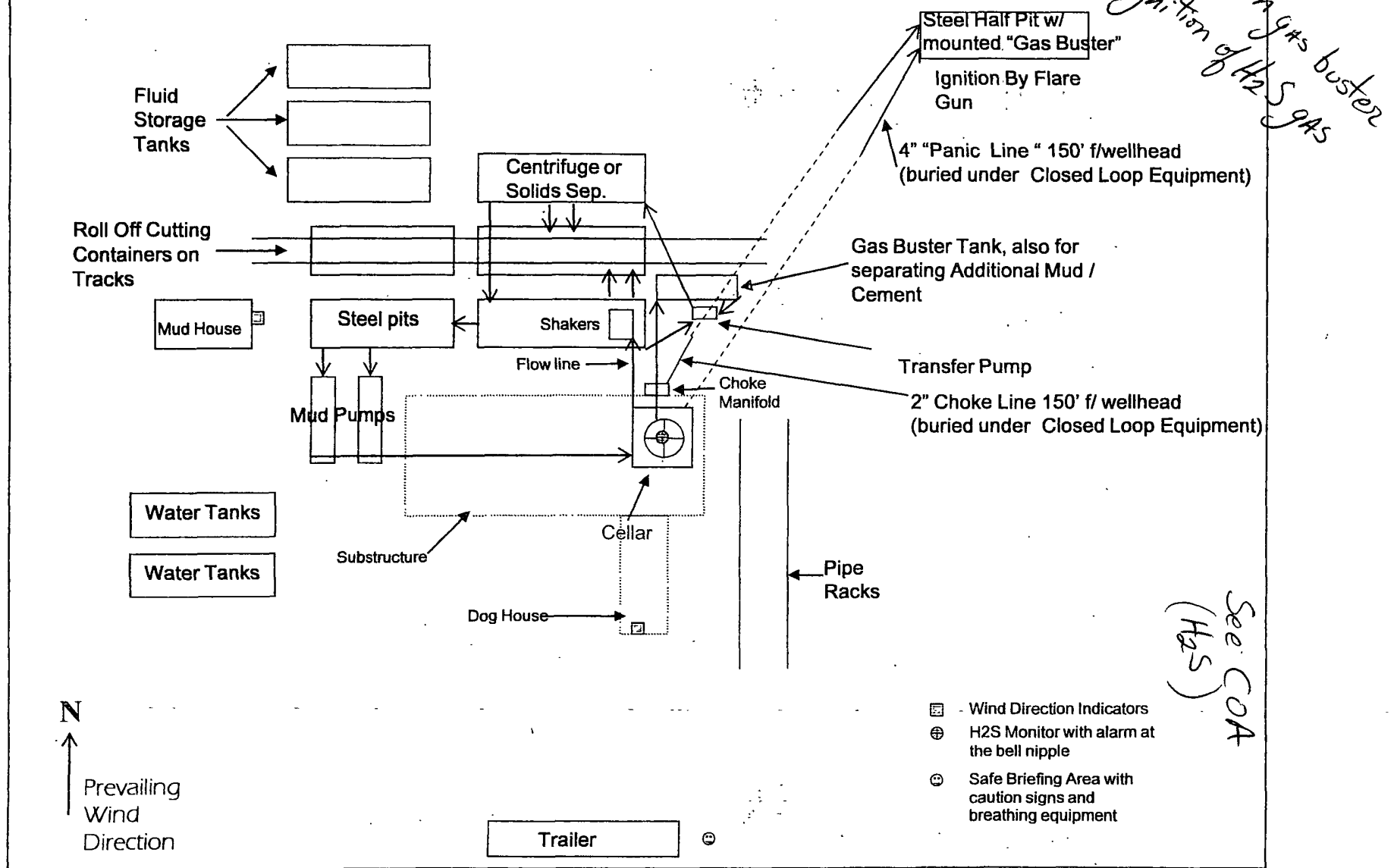
LEA COUNTY EMERGENCY NUMBERS

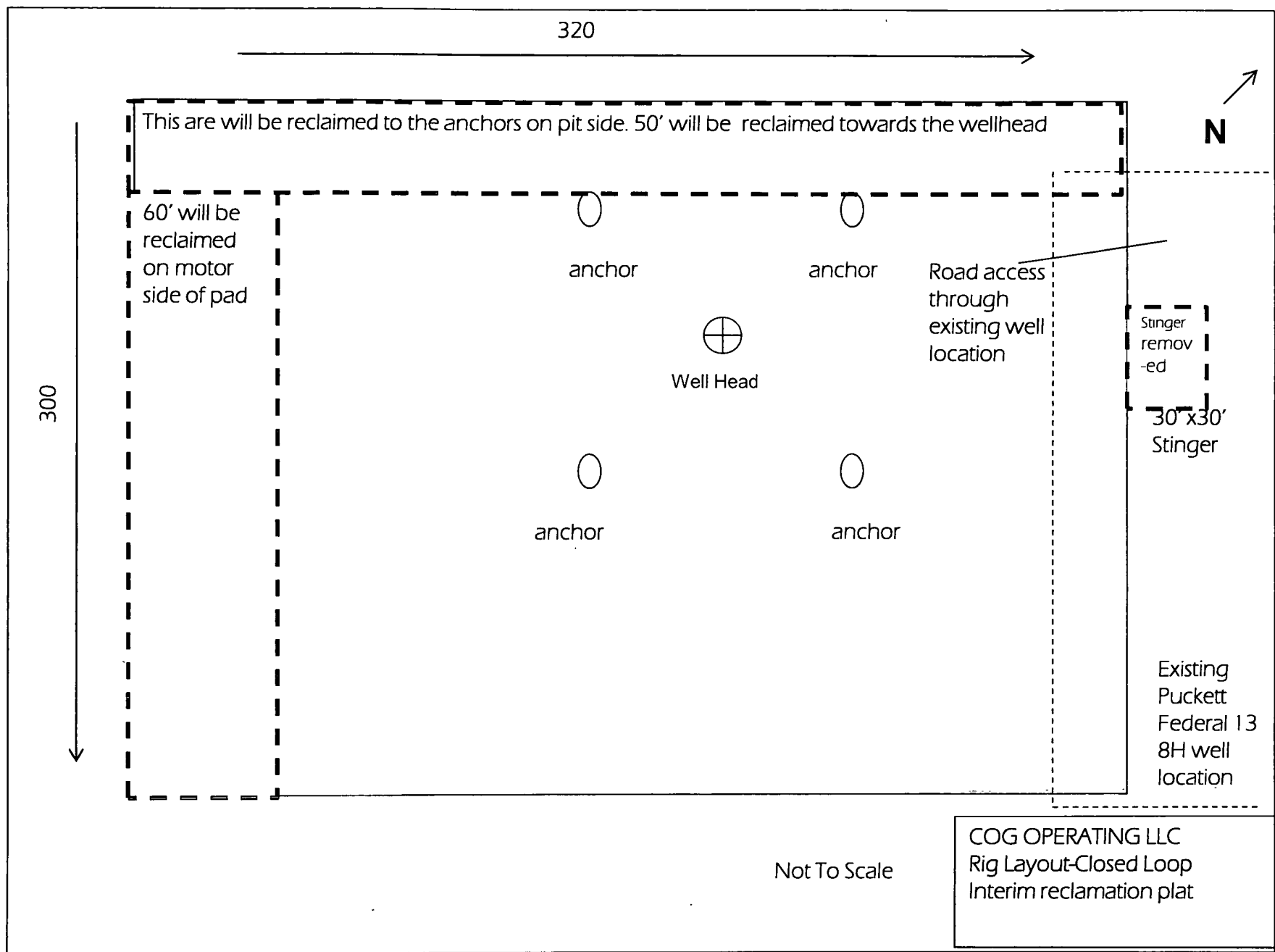
HOBBS FIRE DEPT. 575-397-9308
HOBBS POLICE DEPT. 575-397-9285
LEA CO. SHERIFF DEPT. 575-396-1196

COG Operating LLC

Drilling Location - H₂S Safety Equipment Diagram

EXHIBIT 8





320



This are will be reclaimed to the anchors on pit side. 50' will be reclaimed towards the wellhead

60' will be reclaimed on motor side of pad

anchor

anchor

Road access through existing well location

Well Head

Stinger removed

30'x30' Stinger

anchor

anchor

Existing Puckett Federal 13 8H well location

Not To Scale

COG OPERATING LLC
Rig Layout-Closed Loop
Interim reclamation plat

300

PECOS DISTRICT CONDITIONS OF APPROVAL

| | |
|-----------------------|------------------------------------|
| OPERATOR'S NAME: | COG Operating |
| LEASE NO.: | LC029415B |
| WELL NAME & NO.: | 8H Puckett 12 Federal |
| SURFACE HOLE FOOTAGE: | 190' FSL & 626' FEL |
| BOTTOM HOLE FOOTAGE: | 330' FNL & 330' FEL |
| LOCATION: | Section 12, T.17 S., R.31 E., NMPM |
| COUNTY: | Eddy County, New Mexico |

TABLE OF CONTENTS

Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☒ **Special Requirements**
 - Lesser Prairie-Chicken Timing Stipulations
 - Ground-level Abandoned Well Marker
- ☒ **Construction**
 - Notification
 - Topsoil
 - Closed Loop System
 - Federal Mineral Material Pits
 - Well Pads
 - Roads
- ☐ **Road Section Diagram**
- ☒ **Drilling**
 - H2S requirement
 - Logging requirement
 - Waste Material and Fluids
- ☒ **Production (Post Drilling)**
 - Well Structures & Facilities
 - Pipelines
- ☐ **Interim Reclamation**
- ☒ **Final Abandonment & Reclamation**