ATS-12-816

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Form 3160-3
(March 2012)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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

# APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No. NM-12559

6. If Indian, Allotee or Tribe Name ----------

7. If Unit or CA Agreement, Name and No. ----------

1a. Type of work: [X] DRILL [ ] REENTER

1b. Type of Well: [X] Oil Well [ ] Gas Well [ ] Other [X] Single Zone [ ] Multiple Zone

8. Lease Name and Well No. (39625)
MOMBA "24" FED. COM. #3H

2. Name of Operator COG PRODUCTION LLC. (217955)

9. API Well No. 30-015-40946

3a. Address 2208 WEST MAIN STREET
ARTESIA, NEW MEXICO 88210

3b. Phone No. (include area code) 575-748-6968

10. Field and Pool, or Exploratory (30215)
~~DELAWARE RIVER~~ BONE SPRING
Hay Hollow

4. Location of Well (Report location clearly and in accordance with any State requirements.*)
At surface 43' FNL & 2180' FEL SECTION 24 T26S-R28E
At proposed prod. zone BHL 330' FSL & 2020' FEL SECTION 24 T26S-R28E

11. Sec., T. R. M. or Blk. and Survey or Area
SECTION 24 T26S-R28E

14. Distance in miles and direction from nearest town or post office*
Approximately 14 miles South of Malaga New Mexico

12. County or Parish EDDY

13. State NM

| 15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) | 16. No. of acres in lease | 17. Spacing Unit dedicated to this well |
|---|---|---|
| 43' | 980 | 160 |

| 18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. | 19. Proposed Depth | 20. BLM/BIA Bond No. on file |
|---|---|---|
| 1400' | MD-12,798'<br>TVD-8130' | NMB-000845<br>NMB-000860 |

| 21. Elevations (Show whether DF, KDB, RT, GL, etc.) | 22. Approximate date work will start* | 23. Estimated duration |
|---|---|---|
| 2923' GL | WHEN APPROVED | 30 Days |

## 24. Attachments

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

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must 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).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

| 25. Signature | Name (Printed/Typed) | Date |
|---|---|---|
| Joe T. Janica | Joe T. Janica | 08/17/12 |

Title: Permit Eng.

| Approved by (Signature) | Name (Printed/Typed) | Date |
|---|---|---|
| /s/ James A. Amos | | JAN 4 2013 |

| Title | Office |
|---|---|
| FIELD MANAGER | 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 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)

*(Instructions on page 2)

Carlsbad Controlled Water Basin

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Approval Subject to General Requirements & Special Stipulations Attached

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 Rd., 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 and 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 | Pool Code | Pool Name |
|---|---|---|
| 30-015-40946 | 30215 | ~~Wildcat;~~ HAY HOLLOW; Bone Spring |

| Property Code | Property Name | Well Number |
|---|---|---|
| 39625 | MOMBA 24 FEDERAL COM | 3H |

| OGRID No. | Operator Name | Elevation |
|---|---|---|
| 217955 | COG PRODUCTION LLC | 2923' |

### Surface Location

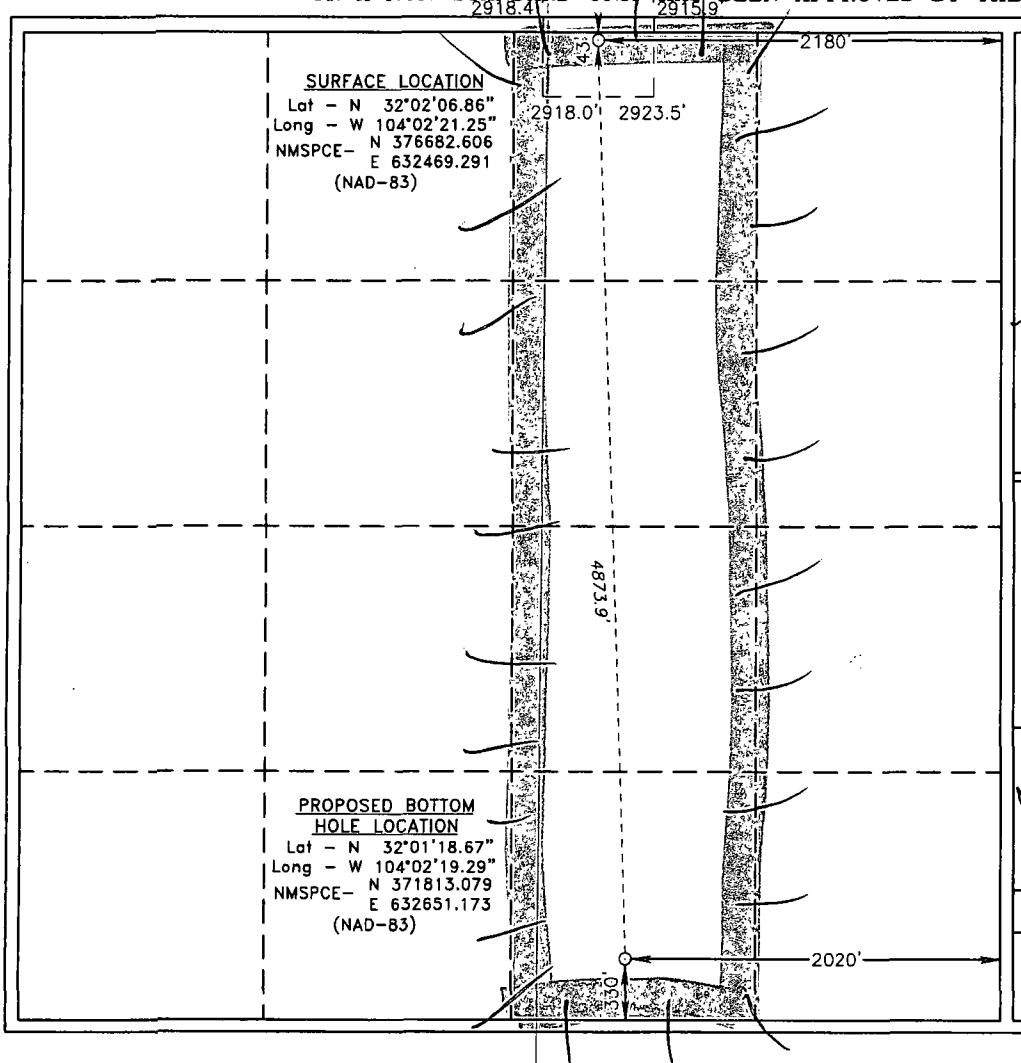
| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| B | 24 | 26 S | 28 E | | 43 | NORTH | 2180 | EAST | EDDY |

### 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 |
|---|---|---|---|---|---|---|---|---|---|
| O | 24 | 26 S | 28 E | | 330 | SOUTH | 2020 | 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




### OPERATOR CERTIFICATION

*I hereby certify that the information contained 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 a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.*

Melanie Parker 8/27/12
Signature Date

Melanie J. Parker
Printed Name

mparker@concho.com
Email Address

### SURVEYOR CERTIFICATION

*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 supervison, and that the same is true and correct to the best of my belief.*

827
5745

Date Surveyed: AUGUST 22, 2012

Signature & Seal of Professional Surveyor

GARY L. JONES — NEW MEXICO — 7977 — REGISTERED PROFESSIONAL SURVEYOR — BASIN SURVEYS

Certificate No. Gary L. Jones 7977

BASIN SURVEYS 26791

**CERTIFICATION:**

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route, that I am familiar with the conditions which presently exist; that the statements made in this plan are to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by COG Production LLC and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

COG PRODUCTION LLC

7-23-12
Date

Rand French – Regulatory Advisor

**COG Production LLC**
**DRILLING AND OPERATIONS PROGRAM**
**Momba 24 Fed Com #3H**
**SHL: 2180' FEL & 43' FNL of Section 24**
**BHL: 2020' FEL & 330' FSL of Section 24**
**Section 24 T26S R28E**
**Eddy County, New Mexico**

In conjunction with Form 3160-3, Application for Permit to Drill subject well, COG Production 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:

| | | |
|---|---|---|
| Rustler | 57' | |
| Water | 120' | |
| Top of Salt | 843' | |
| Base of Salt | 2,435' | |
| Delaware | 2,625' | Oil |
| Bone Spring | 6,326' | Oil |
| 2nd Bone Spring | 7,966' | Oil |
| TD TVD | 8,130' | |
| TD MD | 12,798' | |

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 425' and circulating cement back to surface. All intervals will be isolated by setting 5 ½" casing to total depth and tying back cement to a minimum of 500' into 9-5/8" csg.

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 ½" | 0' - 425' | Surface | 13 3/8" | New | 48# | STC | J-55 | 1.125 | 1.125 | 1.6 |
| 12 ¼" | 0' – 2,645' | Intrmd | 9 5/8" | New | 36# | LTC | J-55 | 1.125 | 1.125 | 1.6 |
| 7 7/8" | 0' – 12,798' | Production Curve & Lateral | 5 ½" | New | 17# | LTC | P-110 | 1.125 | 1.125 | 1.6 |

- While running all casing strings, the pipe will be kept a minimum of 1/3 full at all times to avoid approaching the collapse pressure of casing.

## 4. Proposed Cement Program

a. 13-3/8" Surface — Slurry: 325 sx Class C + 2% $CaCl_2$ (14.8 ppg / 1.34 cuft/sx) **Calculated w/50% excess on OH volumes

b. 9 5/8" Intermediate: — Lead: 425 sx Class C + 4% Gel + 2% $CaCl_2$ (13.5 ppg /1.75 cuft/sx) Tail: 250 sx Class C + 2% $CaCl_2$ (14.8 ppg / 1.34 cuft/sx) **Calculated w/35% excess on OH volumes

See cont

d. 5 ½" Production — Lead: 525 sx 50:50:10 H + Salt+Gilsonite+CFR-3+ HR601 (11.8 ppg / 2.5 cuft/sx) Tail: 975 sx 50:50:2 H +Salt+GasStop +HR601 +CFR-3 (14.4 ppg /1.25 cuft/sx) **Calculated w/35% excess on OH volumes

- The above cement volumes could be revised pending the caliper measurement from the open hole logs.
- The 9-5/8" intermediate string is designed to circulate to surface.
- The production string will at least tie back 500' into 9-5/8" shoe

## 5. Minimum Specifications for Pressure Control:

Nipple up on 13 3/8 with annular preventer tested to 50% of rating working pressure by independent tester and the rest of the 2M system tested to 2000 psi.
Nipple up on 9 5/8 with 3M system tested 3000 psi to by independent tester.
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. A 2" kill line and a minimum 3" choke line will be included in the drilling spool located below the ram-type BOP. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold with 3000 psi WP rating.

## 6. Estimated BHP:

Lateral TD = 3526 psi

## 7. Mud Program: The applicable depths and properties of this system are as follows:

| Depth | Type System | Mud Weight | Viscosity (sec) | Waterloss (cc) |
|---|---|---|---|---|
| 0' – 425' | Fresh Water | 8.4 | 29 | N.C. |
| 425' – 2,645' | Brine | 10 | 29 | N.C. |
| 2,645' – 12,798' (Lateral) | 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.

**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 ½" casing is cemented. Breathing equipment will be on location upon drilling the 13 3/8" shoe until total depth is reached.

**9. Testing, Logging and Coring Program:** See COA

a. Drill stem tests will be based on geological sample shows.
b. If open hole electrical logging is preformed, 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 ½" 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 H2S in this area. If H2S 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 H2S is anticipated to be encountered.

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

a. Road and location construction will begin after the BLM has approved the APD. Anticipated spud date will be as possible after BLM approval and as soon as a rig will be available. Move in operations and drilling is expected to take 30 days.

COG Operating LLC

Production

Eddy County, NM (NAD 83)
Momba 24 Federal Com 3H
Momba 24 Federal Com 3H

Wellbore #1

Plan: Plan #1

# Standard Planning Report

12 July, 2012

| | | | |
|---|---|---|---|
| **Database:** | Houston R5000 Database | **Local Co-ordinate Reference:** | Site Momba 24 Federal Com 3H |
| **Company:** | COG Operating LLC | **TVD Reference:** | WELL @ 2940.50ft (Original Well Elev) |
| **Project:** | Eddy County, NM (NAD 83) | **MD Reference:** | WELL @ 2940.50ft (Original Well Elev) |
| **Site:** | Momba 24 Federal Com 3H | **North Reference:** | Grid |
| **Well:** | Momba 24 Federal Com 3H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Wellbore #1 | | |
| **Design:** | Plan #1 | | |

**Project** Eddy County, NM (NAD 83)

| | | | |
|---|---|---|---|
| **Map System:** | US State Plane 1983 | **System Datum:** | Mean Sea Level |
| **Geo Datum:** | North American Datum 1983 | | |
| **Map Zone:** | New Mexico Eastern Zone | | |

**Site** Momba 24 Federal Com 3H

| | | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 376,682.60 ft | **Latitude:** | 32.03523736 |
| **From:** | Map | **Easting:** | 632,469.30 ft | **Longitude:** | -104.03924062 |
| **Position Uncertainty:** | 0.00 ft | **Slot Radius:** | 13.200 in | **Grid Convergence:** | 0.16 ° |

**Well** Momba 24 Federal Com 3H

| | | | | | | |
|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | 0.00 ft | **Northing:** | 376,682.60 ft | **Latitude:** | 32.03523736 |
| | **+E/-W** | 0.00 ft | **Easting:** | 632,469.30 ft | **Longitude:** | -104.03924062 |
| **Position Uncertainty** | | 0.00 ft | **Wellhead Elevation:** | | **Ground Level:** | 2,923.00 ft |

**Wellbore** Wellbore #1

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|---|---|---|---|---|---|
| | IGRF200510 | 7/12/2012 | 7.65 | 59.93 | 48,389 |

**Design** Plan #1

**Audit Notes:**

| | | | | | |
|---|---|---|---|---|---|
| **Version:** | | **Phase:** | PLAN | **Tie On Depth:** | 0.00 |

| Vertical Section: | Depth From (TVD) (ft) | +N/-S (ft) | +E/-W (ft) | Direction (°) |
|---|---|---|---|---|
| | 0.00 | 0.00 | 0.00 | 177.86 |

**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 | |
| 7,652.54 | 0.00 | 0.00 | 7,652.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 8,402.54 | 90.00 | 177.86 | 8,130.00 | -477.13 | 17.82 | 12.00 | 12.00 | 0.00 | 177.86 | |
| 12,797.99 | 90.00 | 177.86 | 8,130.00 | -4,869.53 | 181.88 | 0.00 | 0.00 | 0.00 | 0.00 | PBHL (Momba 24 Fed |

| | | | |
|---|---|---|---|
| **Database:** | Houston R5000 Database | **Local Co-ordinate Reference:** | Site Momba 24 Federal Com 3H |
| **Company:** | COG Operating LLC | **TVD Reference:** | WELL @ 2940.50ft (Original Well Elev) |
| **Project:** | Eddy County, NM (NAD 83) | **MD Reference:** | WELL @ 2940.50ft (Original Well Elev) |
| **Site:** | Momba 24 Federal Com 3H | **North Reference:** | Grid |
| **Well:** | Momba 24 Federal Com 3H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Wellbore #1 | | |
| **Design:** | Plan #1 | | |

**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) |
|---|---|---|---|---|---|---|---|---|---|
| 7,652.54 | 0.00 | 0.00 | 7,652.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **KOP - Start Build @ 12.00°/100'** | | | | | | | | | |
| 7,700.00 | 5.70 | 177.86 | 7,699.92 | -2.36 | 0.09 | 2.36 | 12.00 | 12.00 | 0.00 |
| 7,800.00 | 17.70 | 177.86 | 7,797.67 | -22.58 | 0.84 | 22.59 | 12.00 | 12.00 | 0.00 |
| 7,900.00 | 29.70 | 177.86 | 7,889.07 | -62.66 | 2.34 | 62.71 | 12.00 | 12.00 | 0.00 |
| 8,000.00 | 41.70 | 177.86 | 7,970.13 | -120.86 | 4.51 | 120.95 | 12.00 | 12.00 | 0.00 |
| 8,100.00 | 53.70 | 177.86 | 8,037.32 | -194.64 | 7.27 | 194.77 | 12.00 | 12.00 | 0.00 |
| 8,200.00 | 65.70 | 177.86 | 8,087.68 | -280.75 | 10.49 | 280.95 | 12.00 | 12.00 | 0.00 |
| 8,206.84 | 66.52 | 177.86 | 8,090.45 | -287.00 | 10.72 | 287.20 | 12.00 | 12.00 | 0.00 |
| **PP @ 8206.84 MD, 8090.45 TVD, 66.52 INC, 177.86 AZ, 287.20 VS** | | | | | | | | | |
| 8,300.00 | 77.70 | 177.86 | 8,119.03 | -375.45 | 14.02 | 375.72 | 12.00 | 12.00 | 0.00 |
| 8,400.00 | 89.70 | 177.86 | 8,129.99 | -474.60 | 17.73 | 474.93 | 12.00 | 12.00 | 0.00 |
| 8,402.54 | 90.00 | 177.86 | 8,130.00 | -477.13 | 17.82 | 477.46 | 12.00 | 12.00 | 0.00 |
| **Landing Point - Hold @ 90.00° INC, 177.86° AZ** | | | | | | | | | |
| 8,500.00 | 90.00 | 177.86 | 8,130.00 | -574.53 | 21.46 | 574.93 | 0.00 | 0.00 | 0.00 |
| 8,600.00 | 90.00 | 177.86 | 8,130.00 | -674.46 | 25.19 | 674.93 | 0.00 | 0.00 | 0.00 |
| 8,700.00 | 90.00 | 177.86 | 8,130.00 | -774.39 | 28.92 | 774.93 | 0.00 | 0.00 | 0.00 |
| 8,800.00 | 90.00 | 177.86 | 8,130.00 | -874.32 | 32.66 | 874.93 | 0.00 | 0.00 | 0.00 |
| 8,900.00 | 90.00 | 177.86 | 8,130.00 | -974.25 | 36.39 | 974.93 | 0.00 | 0.00 | 0.00 |
| 9,000.00 | 90.00 | 177.86 | 8,130.00 | -1,074.18 | 40.12 | 1,074.93 | 0.00 | 0.00 | 0.00 |
| 9,100.00 | 90.00 | 177.86 | 8,130.00 | -1,174.11 | 43.85 | 1,174.93 | 0.00 | 0.00 | 0.00 |
| 9,200.00 | 90.00 | 177.86 | 8,130.00 | -1,274.04 | 47.59 | 1,274.93 | 0.00 | 0.00 | 0.00 |
| 9,300.00 | 90.00 | 177.86 | 8,130.00 | -1,373.97 | 51.32 | 1,374.93 | 0.00 | 0.00 | 0.00 |
| 9,400.00 | 90.00 | 177.86 | 8,130.00 | -1,473.90 | 55.05 | 1,474.93 | 0.00 | 0.00 | 0.00 |
| 9,500.00 | 90.00 | 177.86 | 8,130.00 | -1,573.83 | 58.78 | 1,574.93 | 0.00 | 0.00 | 0.00 |
| 9,600.00 | 90.00 | 177.86 | 8,130.00 | -1,673.76 | 62.52 | 1,674.93 | 0.00 | 0.00 | 0.00 |
| 9,700.00 | 90.00 | 177.86 | 8,130.00 | -1,773.69 | 66.25 | 1,774.93 | 0.00 | 0.00 | 0.00 |
| 9,800.00 | 90.00 | 177.86 | 8,130.00 | -1,873.62 | 69.98 | 1,874.93 | 0.00 | 0.00 | 0.00 |
| 9,900.00 | 90.00 | 177.86 | 8,130.00 | -1,973.55 | 73.71 | 1,974.93 | 0.00 | 0.00 | 0.00 |
| 10,000.00 | 90.00 | 177.86 | 8,130.00 | -2,073.48 | 77.45 | 2,074.93 | 0.00 | 0.00 | 0.00 |
| 10,100.00 | 90.00 | 177.86 | 8,130.00 | -2,173.41 | 81.18 | 2,174.93 | 0.00 | 0.00 | 0.00 |
| 10,200.00 | 90.00 | 177.86 | 8,130.00 | -2,273.34 | 84.91 | 2,274.93 | 0.00 | 0.00 | 0.00 |
| 10,300.00 | 90.00 | 177.86 | 8,130.00 | -2,373.27 | 88.64 | 2,374.93 | 0.00 | 0.00 | 0.00 |
| 10,400.00 | 90.00 | 177.86 | 8,130.00 | -2,473.21 | 92.38 | 2,474.93 | 0.00 | 0.00 | 0.00 |
| 10,500.00 | 90.00 | 177.86 | 8,130.00 | -2,573.14 | 96.11 | 2,574.93 | 0.00 | 0.00 | 0.00 |
| 10,600.00 | 90.00 | 177.86 | 8,130.00 | -2,673.07 | 99.84 | 2,674.93 | 0.00 | 0.00 | 0.00 |
| 10,700.00 | 90.00 | 177.86 | 8,130.00 | -2,773.00 | 103.57 | 2,774.93 | 0.00 | 0.00 | 0.00 |
| 10,800.00 | 90.00 | 177.86 | 8,130.00 | -2,872.93 | 107.31 | 2,874.93 | 0.00 | 0.00 | 0.00 |
| 10,900.00 | 90.00 | 177.86 | 8,130.00 | -2,972.86 | 111.04 | 2,974.93 | 0.00 | 0.00 | 0.00 |
| 11,000.00 | 90.00 | 177.86 | 8,130.00 | -3,072.79 | 114.77 | 3,074.93 | 0.00 | 0.00 | 0.00 |
| 11,100.00 | 90.00 | 177.86 | 8,130.00 | -3,172.72 | 118.50 | 3,174.93 | 0.00 | 0.00 | 0.00 |
| 11,200.00 | 90.00 | 177.86 | 8,130.00 | -3,272.65 | 122.24 | 3,274.93 | 0.00 | 0.00 | 0.00 |
| 11,300.00 | 90.00 | 177.86 | 8,130.00 | -3,372.58 | 125.97 | 3,374.93 | 0.00 | 0.00 | 0.00 |
| 11,400.00 | 90.00 | 177.86 | 8,130.00 | -3,472.51 | 129.70 | 3,474.93 | 0.00 | 0.00 | 0.00 |
| 11,500.00 | 90.00 | 177.86 | 8,130.00 | -3,572.44 | 133.43 | 3,574.93 | 0.00 | 0.00 | 0.00 |
| 11,600.00 | 90.00 | 177.86 | 8,130.00 | -3,672.37 | 137.17 | 3,674.93 | 0.00 | 0.00 | 0.00 |
| 11,700.00 | 90.00 | 177.86 | 8,130.00 | -3,772.30 | 140.90 | 3,774.93 | 0.00 | 0.00 | 0.00 |
| 11,800.00 | 90.00 | 177.86 | 8,130.00 | -3,872.23 | 144.63 | 3,874.93 | 0.00 | 0.00 | 0.00 |
| 11,900.00 | 90.00 | 177.86 | 8,130.00 | -3,972.16 | 148.36 | 3,974.93 | 0.00 | 0.00 | 0.00 |
| 12,000.00 | 90.00 | 177.86 | 8,130.00 | -4,072.09 | 152.10 | 4,074.93 | 0.00 | 0.00 | 0.00 |
| 12,100.00 | 90.00 | 177.86 | 8,130.00 | -4,172.02 | 155.83 | 4,174.93 | 0.00 | 0.00 | 0.00 |
| 12,200.00 | 90.00 | 177.86 | 8,130.00 | -4,271.95 | 159.56 | 4,274.93 | 0.00 | 0.00 | 0.00 |
| 12,300.00 | 90.00 | 177.86 | 8,130.00 | -4,371.88 | 163.29 | 4,374.93 | 0.00 | 0.00 | 0.00 |

| | | | |
|---|---|---|---|
| **Database:** | Houston R5000 Database | **Local Co-ordinate Reference:** | Site Momba 24 Federal Com 3H |
| **Company:** | COG Operating LLC | **TVD Reference:** | WELL @ 2940.50ft (Original Well Elev) |
| **Project:** | Eddy County, NM (NAD 83) | **MD Reference:** | WELL @ 2940.50ft (Original Well Elev) |
| **Site:** | Momba 24 Federal Com 3H | **North Reference:** | Grid |
| **Well:** | Momba 24 Federal Com 3H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Wellbore #1 | | |
| **Design:** | Plan #1 | | |

**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) |
|---|---|---|---|---|---|---|---|---|---|
| 12,400.00 | 90.00 | 177.86 | 8,130.00 | -4,471.81 | 167.03 | 4,474.93 | 0.00 | 0.00 | 0.00 |
| 12,500.00 | 90.00 | 177.86 | 8,130.00 | -4,571.74 | 170.76 | 4,574.93 | 0.00 | 0.00 | 0.00 |
| 12,600.00 | 90.00 | 177.86 | 8,130.00 | -4,671.67 | 174.49 | 4,674.93 | 0.00 | 0.00 | 0.00 |
| 12,700.00 | 90.00 | 177.86 | 8,130.00 | -4,771.60 | 178.22 | 4,774.93 | 0.00 | 0.00 | 0.00 |
| 12,797.99 | 90.00 | 177.86 | 8,130.00 | -4,869.53 | 181.88 | 4,872.92 | 0.00 | 0.00 | 0.00 |
| **TD @ 12797.99' MD, 8130.00' TVD - PBHL (Momba 24 Federal Com 3H Plan 1)** | | | | | | | | | |

**Design Targets**

| Target Name - hit/miss target - Shape | Dip Angle (°) | Dip Dir. (°) | TVD (ft) | +N/-S (ft) | +E/-W (ft) | Northing (ft) | Easting (ft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| PBHL (Momba 24 Feder - plan hits target center - Point | 0.00 | 0.00 | 8,130.00 | -4,869.53 | 181.88 | 371,813.08 | 632,651.18 | 32.02184991 | -104.03869652 |

**Plan Annotations**

| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates +N/-S (ft) | Local Coordinates +E/-W (ft) | Comment |
|---|---|---|---|---|
| 7,652.54 | 7,652.54 | 0.00 | 0.00 | KOP - Start Build @ 12.00°/100' |
| 8,206.84 | 8,090.45 | -287.00 | 10.72 | PP @ 8206.84 MD, 8090.45 TVD, 66.52 INC, 177.86 AZ, 287.20 VS |
| 8,402.54 | 8,130.00 | -477.13 | 17.82 | Landing Point - Hold @ 90.00° INC, 177.86° AZ |
| 12,797.99 | 8,130.00 | -4,869.53 | 181.88 | TD @ 12797.99' MD, 8130.00' TVD |

CRESCENT DIRECTIONAL DRILLING

# COG Operating LLC
# Momba 24 Federal Com 3H
# Eddy County, NM (NAD 83)
# Plan #1

CONCHO

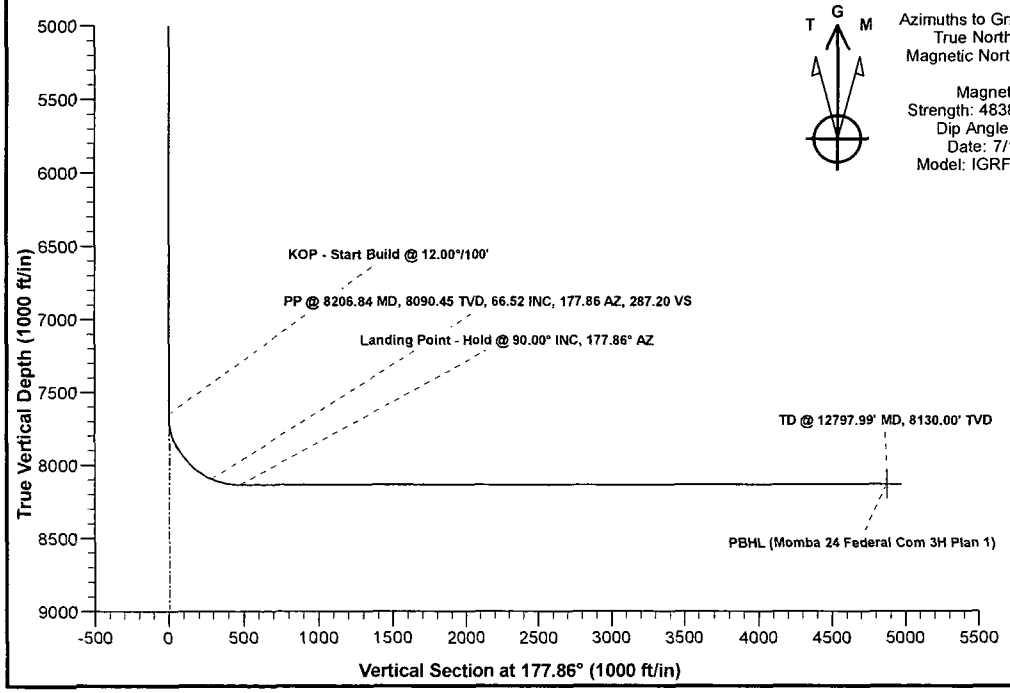
| Surface Location | | Ground Elev: 2923.00 WELL @ 2940.50ft (Original Well Elev) | | | |
|---|---|---|---|---|---|
| +N/-S | +E/-W | Northing | Easting | Latittude | Longitude |
| 0.00 | 0.00 | 376682.61 | 632469.29 | 32.03523736 | -104.03924062 |

TARGET DETAILS

| Name | TVD | +N/-S | +E/-W | Northing | Easting | Latitude | Longitude |
|---|---|---|---|---|---|---|---|
| PBHL (Momba 24 Federal Com 3H Plan 1) | 8130.00 | -4869.53 | 181.88 | 371813.08 | 632651.17 | 32.02184991 | -104.03869652 |

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 | |
| 2 | 7652.54 | 0.00 | 0.00 | 7652.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | KOP - Start Build @ 12.00°/100' |
| 3 | 8402.54 | 90.00 | 177.86 | 8130.00 | -477.13 | 17.82 | 12.00 | 177.86 | 477.46 | Landing Point - Hold @ 90.00° INC, 177.86° AZ |
| 4 | 12797.99 | 90.00 | 177.86 | 8130.00 | -4869.53 | 181.88 | 0.00 | 0.00 | 4872.92 | TD @ 12797.99' MD, 8130.00' TVD |

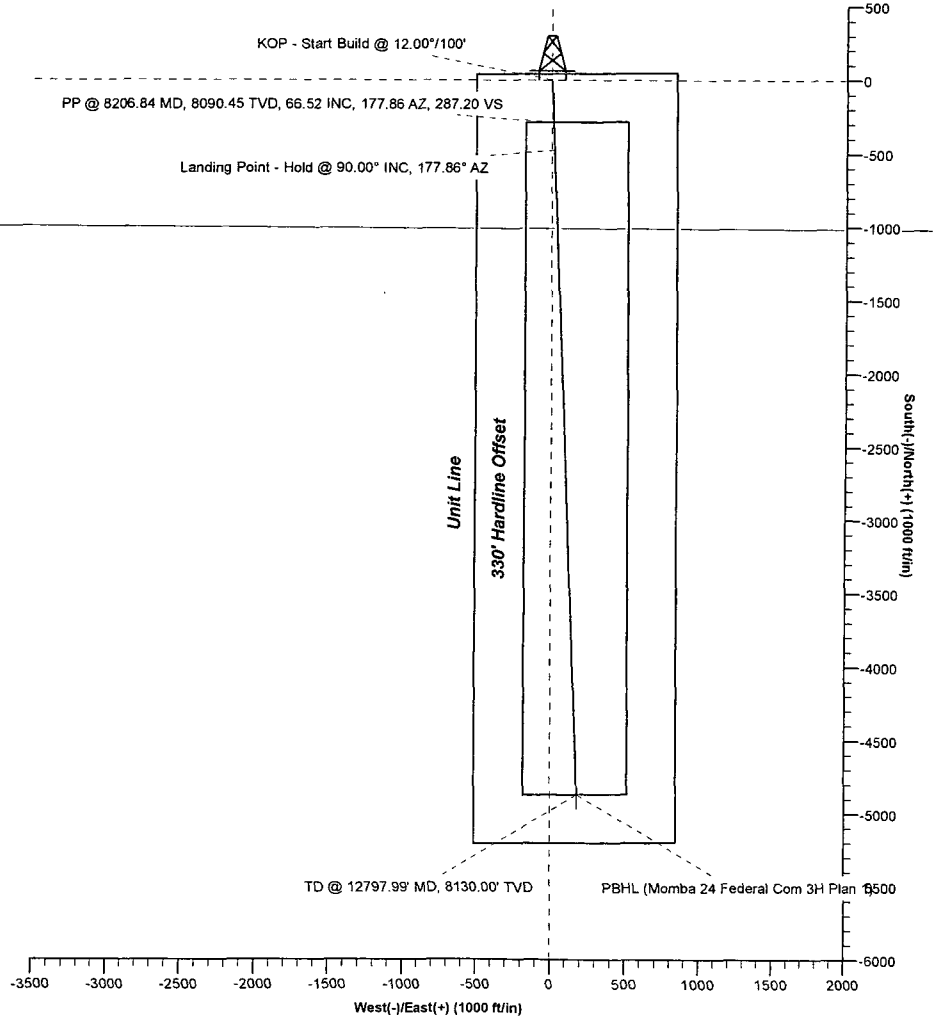




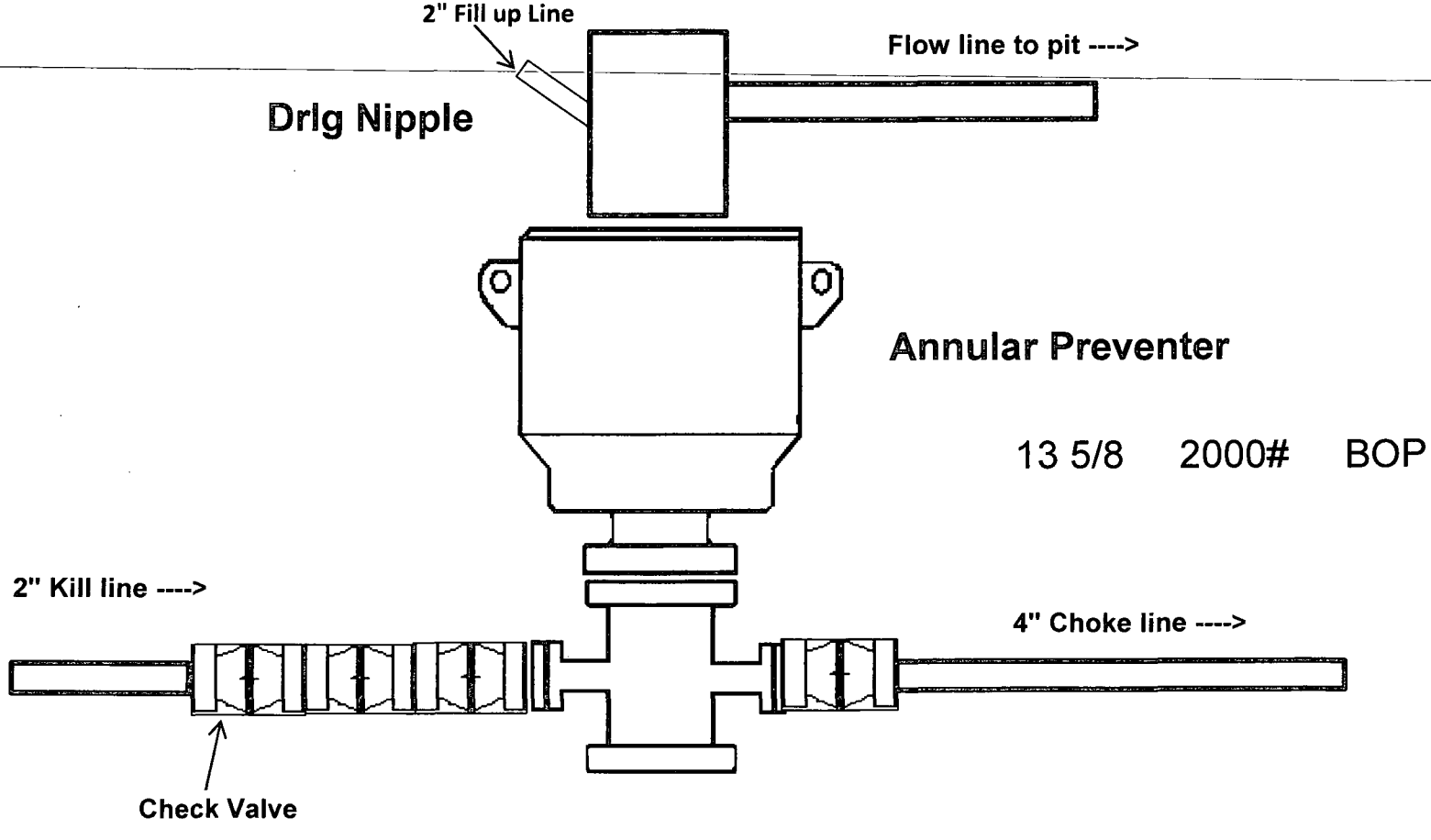


Azimuths to Grid North
True North: -0.16°
Magnetic North: 7.49°

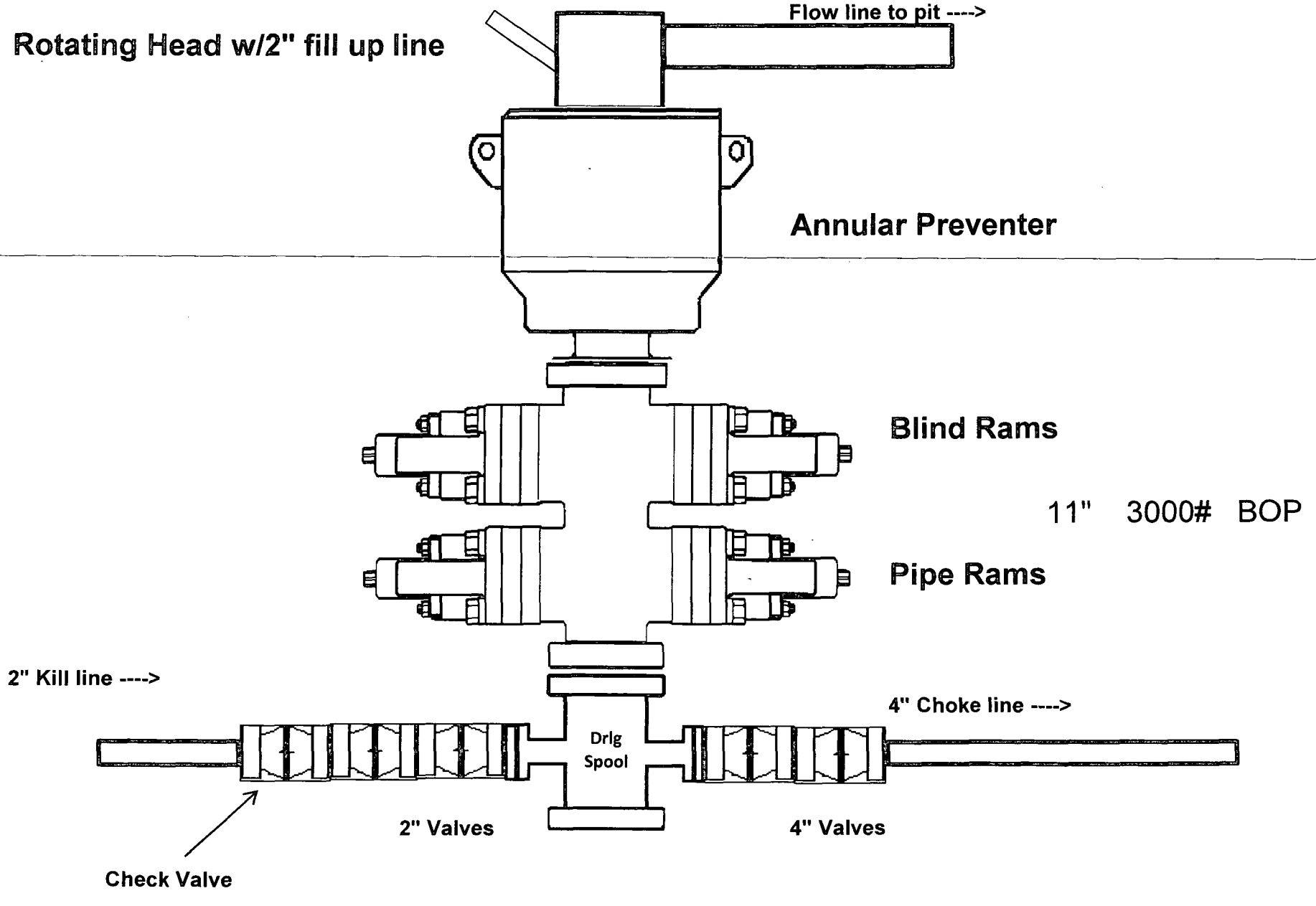
Magnetic Field
Strength: 48389.0snT
Dip Angle: 59.93°
Date: 7/12/2012
Model: IGRF200510



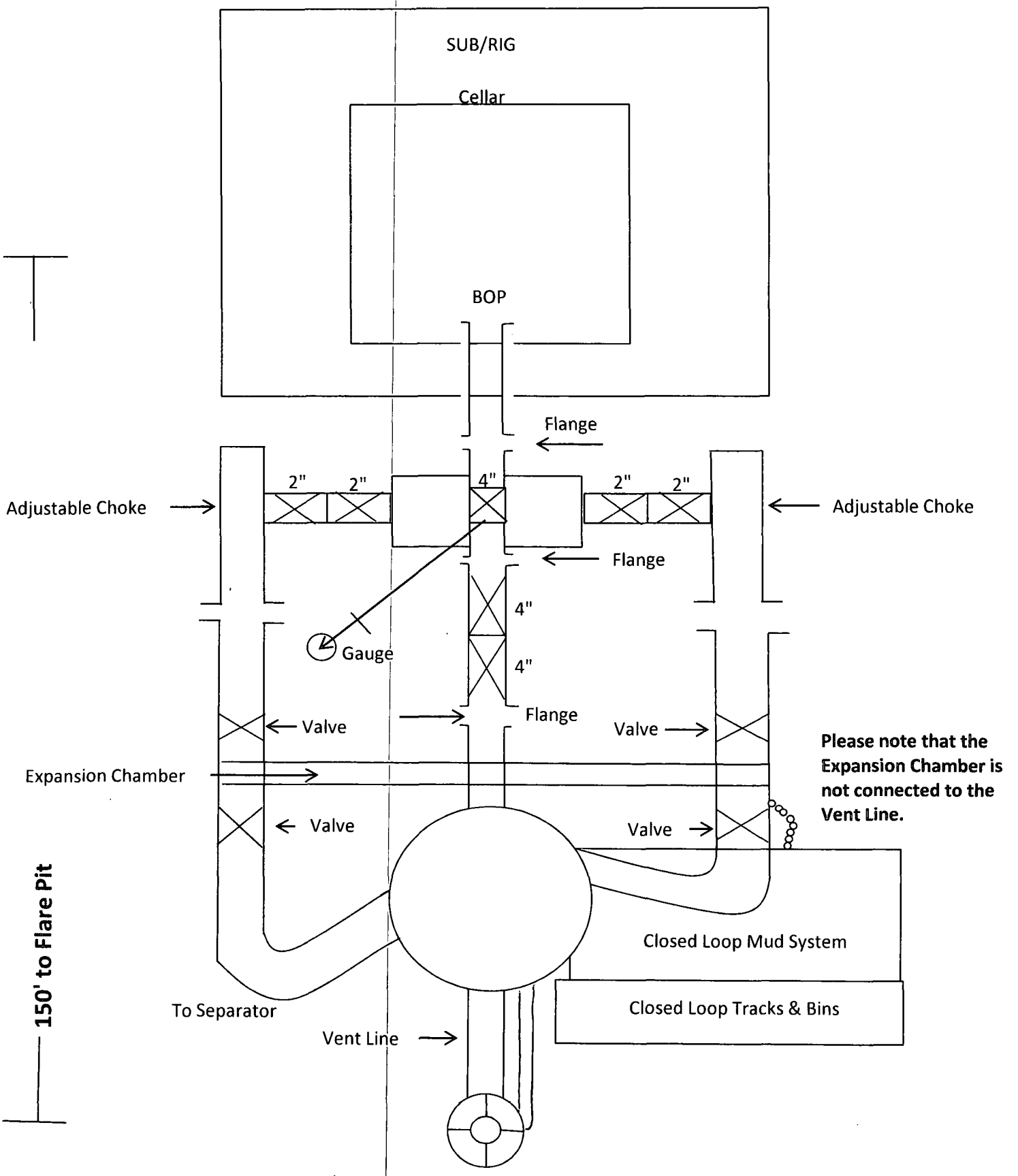
# 2,000 psi BOP Schematic



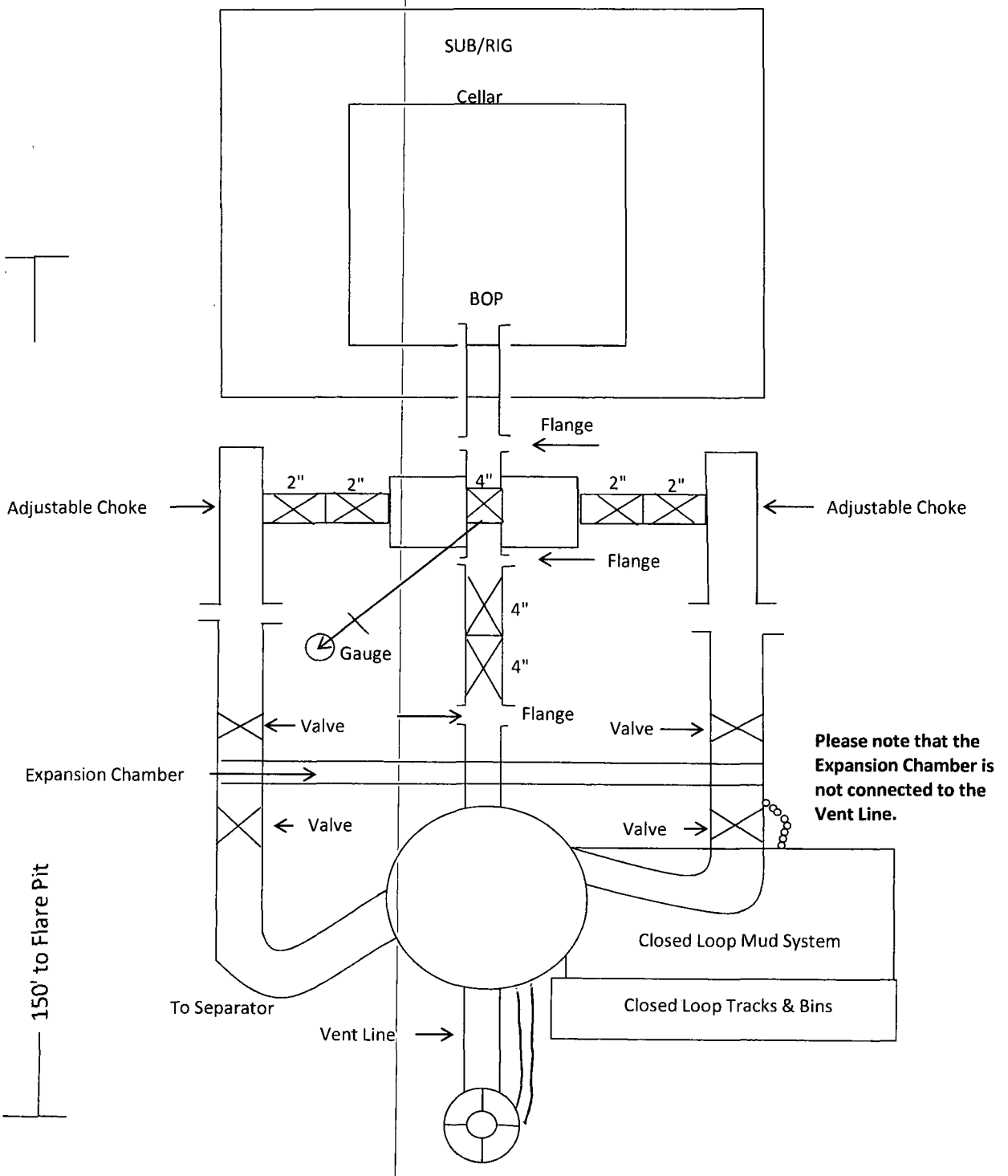
# 3,000 psi BOP Schematic



# 2M Choke Manifold Equipment



# 3M Choke Manifold Equipment



# *New Mexico Office of the State Engineer*
# Water Column/Average Depth to Water

No records found.

**PLSS Search:**

**Section(s):** 24 **Township:** 26S **Range:** 28E

COG Production LLC

Rig Plat & Closed Loop Equipment Diagram

Well pad will be 340' X 330' with cellar in center of pad

Flare Lines will be from both Choke Manifold & Separator to edge of location which is +/- 170'

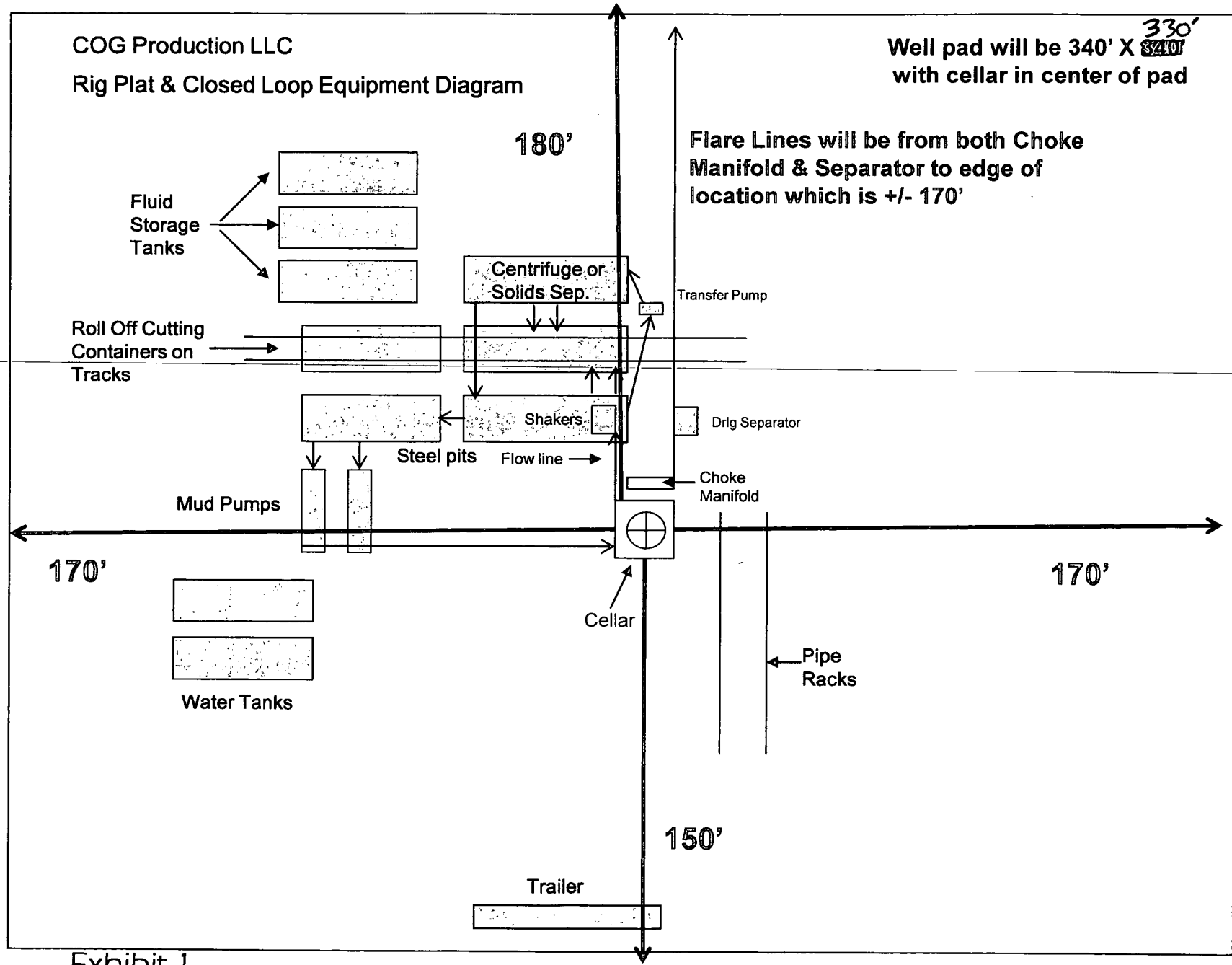



Exhibit 1

# COG PRODUCTION LLC
# HYDROGEN SULFIDE DRILLING OPERATIONS 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:

A. The hazards and characteristics of hydrogen sulfide ($H_2S$).

B. The proper use and maintenance of personal protective equipment and life support systems.

C. The proper use of $H_2S$ detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.

D. The proper techniques for first aid and rescue procedures.

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

A. The effects of $H_2S$ on metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.

B. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.

C. The contents and requirements of the $H_2S$ Drilling Operations Plan and the Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable $H_2S$ zone (within 3 days or 500 feet) and weekly $H_2S$ and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific $H_2S$ Drilling Operations Plan and the Public Protection Plan. This plan shall be available at the well site. All personnel will be required to carry documentation that they have received the proper training.

## II. $H_2S$ SAFETY EQUIPMENT AND SYSTEMS

Note: All $H_2S$ 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 reasonably expected to contain $H_2S$.

A. Well Control Equipment:

Flare line.

Choke manifold.

Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.

Auxiliary equipment to include: annular preventer, mud-gas separator, rotating head.

B. Protective equipment for essential personnel:

Mark II Surviveair 30-minute units located in the dog house and at briefing areas.

C. $H_2S$ detection and monitoring equipment:

2 - portable $H_2S$ monitor positioned on location for best coverage and response. These units have warning lights and audible sirens when $H_2S$ levels of 20 ppm are reached.

D. Visual warning systems:

Caution/Danger signs 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.

E. Mud Program:

The mud program has been designed to minimize the volume of $H_2S$ circulated to the surface.

F. Metallurgy:

All drill strings, casings, tubing, wellhead, blowout preventers, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for $H_2S$ service.

G. Communication:

Company vehicles equipped with cellular telephone.

COG Production LLC has conducted a review to determine if an H2S contingency plan is required for the above referenced well. We were able to conclude that any potential hazardous volume would be minimal. H2S concentrations of wells in this area from surface to TD are low enough; therefore, we do not believe that an H2S contingency plan is necessary.

# WARNING

**YOU ARE ENTERING AN $H_2S$ AREA**
**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. ***CK WITH COG PRODUCTION LLC FOREMAN AT MAIN OFFICE***

COG PRODUCTION LLC

1-575-748-6940

# EMERGENCY CALL LIST

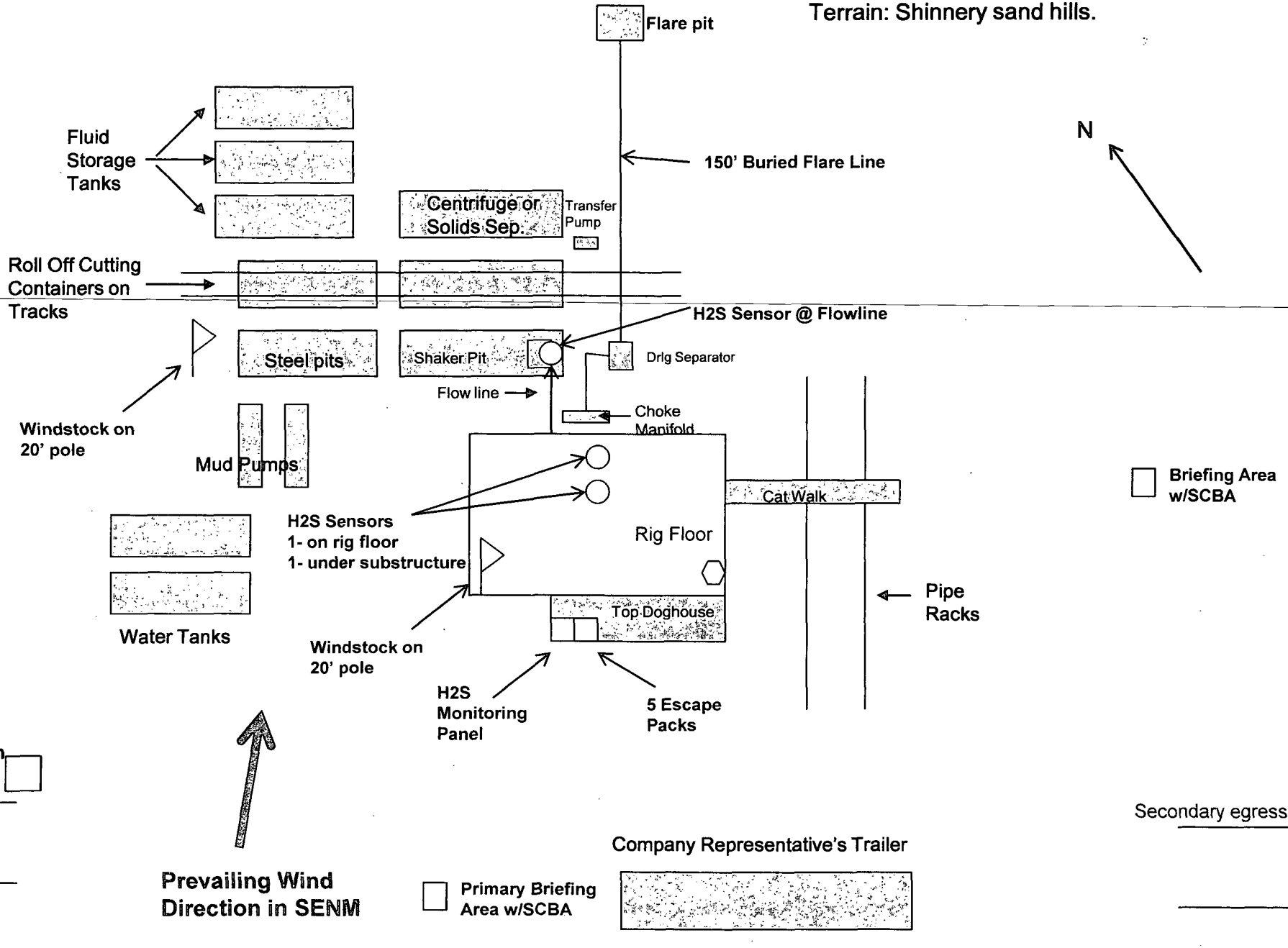
| | OFFICE | MOBILE | HOME |
|---|---|---|---|
| COG OPERATING LLC OFFICE | 575-748-6940 | | |
| SHERYL BAKER | 575-748-6940 | 432-934-1873 | 575-748-2396 |
| RON BEASLEY | 575-746-2010 | 432-254-9883 | |
| SETH WILD | 575-748-6940 | 432-528-3633 | |
| DEAN CHUMBLEY | 575-748-3303 | 575-748-5988 | 575-748-2426 |

# EMERGENCY RESPONSE NUMBERS

| | OFFICE |
|---|---|
| STATE POLICE | 575-748-9718 |
| EDDY COUNTY SHERIFF | 575-746-2701 |
| EMERGENCY MEDICAL SERVICES (AMBULANCE) | 911 or 575-746-2701 |
| EDDY COUNTY EMERGENCY MANAGEMENT (HARRY BURGESS) | 575-887-9511 |
| STATE EMERGENCY RESPONSE CENTER (SERC) | 575-476-9620 |
| CARLSBAD POLICE DEPARTMENT | 575-885-2111 |
| CARLSBAD FIRE DEPARTMENT | 575-885-3125 |
| NEW MEXICO OIL CONSERVATION DIVISION | 575-748-1283 |
| INDIAN FIRE & SAFETY | 800-530-8693 |
| HALLIBURTON SERVICES | 800-844-8451 |

Well pad will be 330' X 340'
with cellar in center of pad

COG Production LLC
$H_2S$ Equipment Schematic
Terrain: Shinnery sand hills.



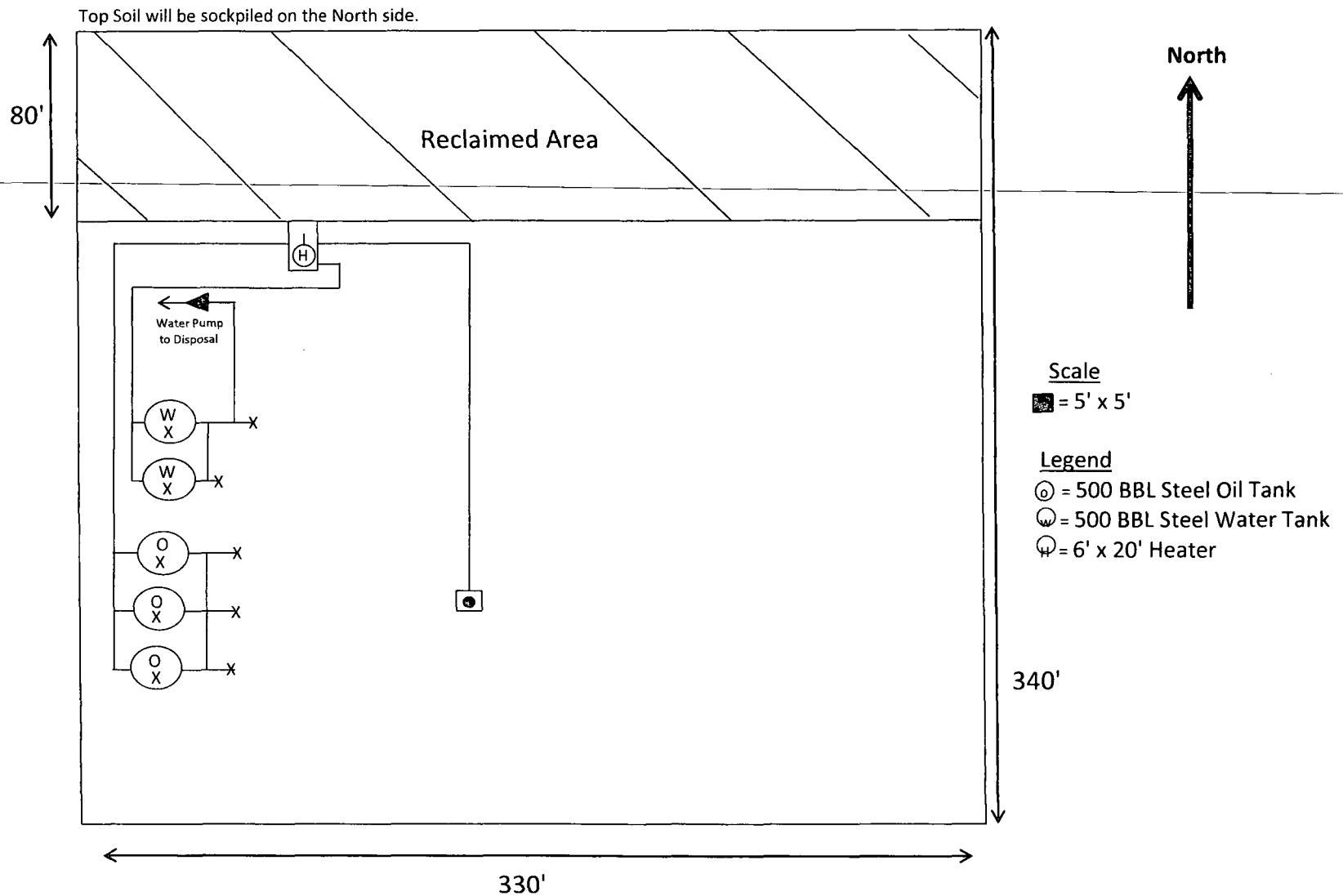
CONCHO

COG Production LLC
2208 West Main
Artesia, NM 88210

# Exhibit 3

## Production Facility Layout

Momba 24 Federal Com #3H
Section 24-T26S-R28E



# PECOS DISTRICT
# CONDITIONS OF APPROVAL

| | |
|---|---|
| OPERATOR'S NAME: | COG Production |
| LEASE NO.: | NM12559 |
| WELL NAME & NO.: | 3H Momba 24 Federal Com |
| SURFACE HOLE FOOTAGE: | 43' FNL & 2180' FEL |
| BOTTOM HOLE FOOTAGE | 330' FSL & 2020 FEL |
| LOCATION: | Section 24, T.26 S., R.28 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.