AT5-08-904
EA-09-70

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OCD-HOBBS

Form 3160-3
(April 2004)

NOV 19 2008

HOBBS (M

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: ☑ DRILL ☐ REENTER | 5 Lease Serial No: **LC-029405B** |
| | 6 If Indian, Allotee or Tribe Name: **N/A** |
| | 7 If Unit or CA Agreement, Name and No: **N/A** |
| 1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone | 8 Lease Name and Well No.: **G C FEDERAL #32** <30248> |
| 2 Name of Operator: **COG Operating LLC** <229137> | 9 API Well No.: **30-025- 39270** |
| 3a Address: **550 W. Texas, Suite 1300 Midland TX 79701** / 3b. Phone No. (include area code): **(432) 686-4385** | 10 Field and Pool, or Exploratory: **Maljamar; Yeso, West 44500** |
| 4. Location of Well (Report location clearly and in accordance with any State requirements *)<br>At surface: **485' FSL & 2065' FEL, UL O**<br>At proposed prod. zone: **330' FSL & 1650' FEL, UL O** | 11 Sec., T R M or Blk and Survey or Area: **Sec 20, T17S, R32E** |
| 14 Distance in miles and direction from nearest town or post office*: **3 miles south of Maljamar NM** | 12 County or Parish: **Lea** / 13 State: **NM** |

| | | |
|---|---|---|
| 15 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig unit line, if any): **485'** | 16 No of acres in lease: **1602** | 17 Spacing Unit dedicated to this well: **40** |
| 18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft: **325'** | 19 Proposed Depth: **7100' TVD** / **7121 MD** | 20 BLM/BIA Bond No. on file: **NMB000215** |
| 21 Elevations (Show whether DF, KDB, RT, GL, etc.): **3978' GL** | 22 Approximate date work will start*: **10/15/2008** | 23 Estimated duration: **10 days** |

24. Attachments

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

1 Well plat certified by a registered surveyor.
2 A Drilling Plan
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)
5 Operator certification
6 Such other site specific information and/or plans as may be required by the authorized officer

| | | |
|---|---|---|
| 25 Signature: Robyn Odom | Name (Printed/Typed): **Robyn Odom** | Date: **09/10/2008** |
| Title: **Agent** | | |
| Approved by (Signature): **/s/ James Stovall** | Name (Printed/Typed): **/s/ James Stovall** | Date: **NOV 17 2008** |
| 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 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**

APPROVAL SUBJECT TO GENERAL REQUIREMENTS AND SPECIAL STIPULATIONS ATTACHED

SEE ATTACHED FOR CONDITIONS OF APPROVAL

DISTRICT I
1625 N FRENCH DR., HOBBS, NM 88240

DISTRICT II
1301 W GRAND AVENUE, ARTESIA, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV
1220 S ST. FRANCIS DR., SANTA FE, NM 87505

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 October 12, 2005
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

## WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

| API Number | Pool Code | Pool Name |
|---|---|---|
| 30-025- 39270 | 44500 | MALAJAMAR; YESO, WEST |

| Property Code | Property Name | Well Number |
|---|---|---|
| 302498 | GC FEDERAL | 32 |

| OGRID No. | Operator Name | Elevation |
|---|---|---|
| 229137 | COG OPERATING, LLC | 3978' |

### Surface Location

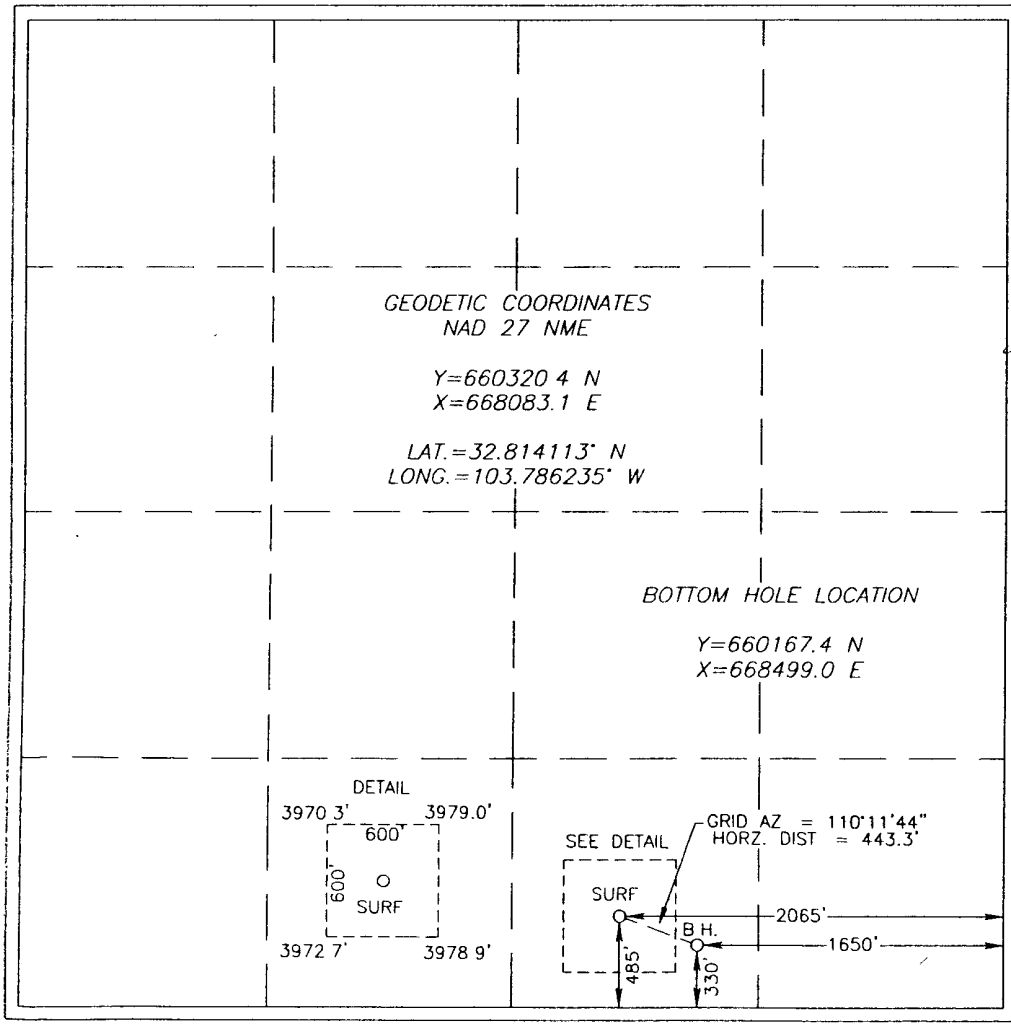
| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| O | 20 | 17-S | 32-E | | 485 | SOUTH | 2065 | EAST | LEA |

### 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 | 20 | 17-S | 32-E | | 330 | SOUTH | 1650 | EAST | LEA |

| Dedicated Acres | Joint or Infill | Consolidation Code | Order No. |
|---|---|---|---|
| 40 | | | |

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 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.*

Signature 9/15/2008 Date

Robyn Odom
Printed Name

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

RONALD J. EIDSON
AUGUST 30, 2008
NEW MEXICO
3239
REGISTERED PROFESSIONAL SURVEYOR

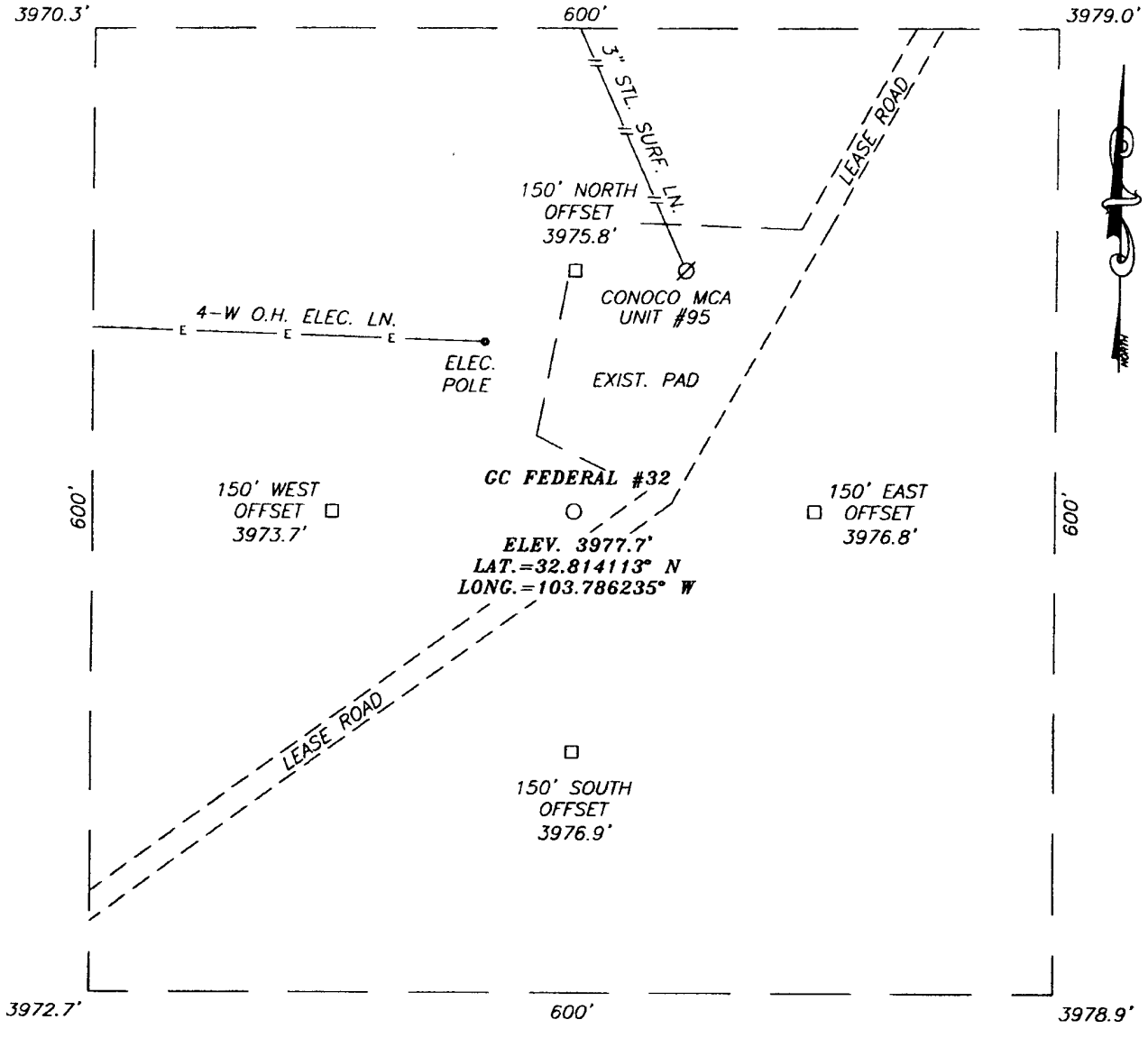
Date Surveyed AUGUST 30, 2008 REV. 09.10.08 JC

Signature & Seal of Professional Surveyor

Certificate No. GARY EIDSON 12641
RONALD J. EIDSON 3239

# SECTION 20, TOWNSHIP 17 SOUTH, RANGE 32 EAST, N.M.P.M.,

LEA COUNTY, NEW MEXICO




DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF L126 (MALJAMAR ROAD) AND CONOCO ROAD, GO WEST ON CONOCO ROAD APPROX. 1.4 MILES TO A LEASE ROAD. TURN LEFT AND GO SOUTH THEN SOUTHWEST APPROX. 0.4 MILES TO THE CONOCO MCA UNIT #95 WELL PAD. THIS LOCATION IS APPROX. 150 FEET SOUTHWEST.

100 0 100 200 Feet

Scale: 1"=100'

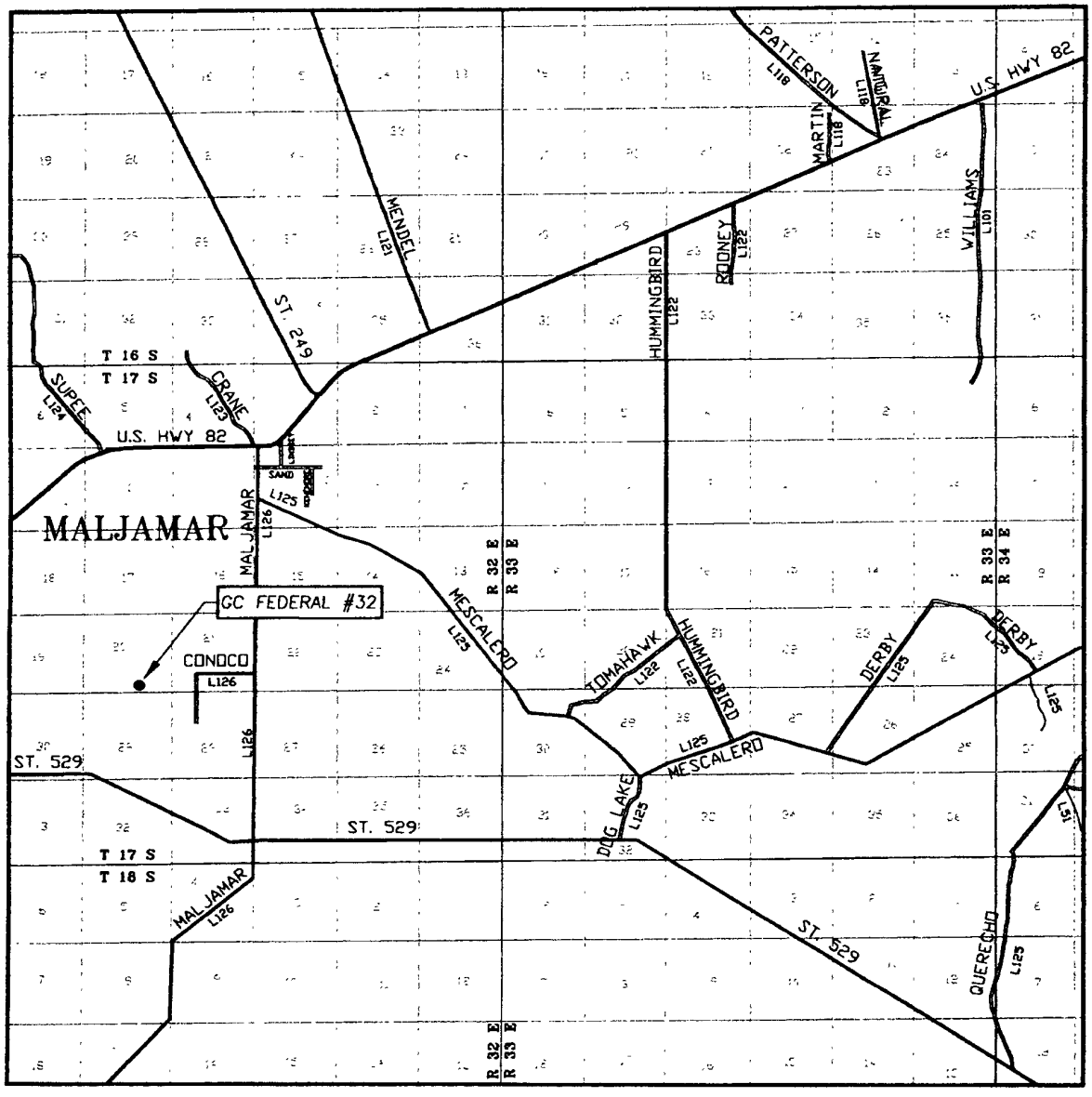

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M 88240
(505) 393-3117


## COG OPERATING, LLC

GC FEDERAL #32 WELL
LOCATED 485 FEET FROM THE SOUTH LINE
AND 2065 FEET FROM THE EAST LINE OF SECTION 20,
TOWNSHIP 17 SOUTH, RANGE 32 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.

| | | |
|---|---|---|
| Survey Date: 08/30/08 | Sheet 1 of 1 Sheets | |
| W.O. Number: 08.11.1243 | Dr By: JC | Rev 1:N/A |
| Date. 09/04/08 | 08111243 | Scale: 1"=100' |

# VICINITY MAP




SCALE: 1" = 2 MILES

SEC. 20 TWP. 17-S RGE. 32-E

SURVEY N.M.P.M.

COUNTY LEA STATE NEW MEXICO

DESCRIPTION 485' FSL & 2065' FEL

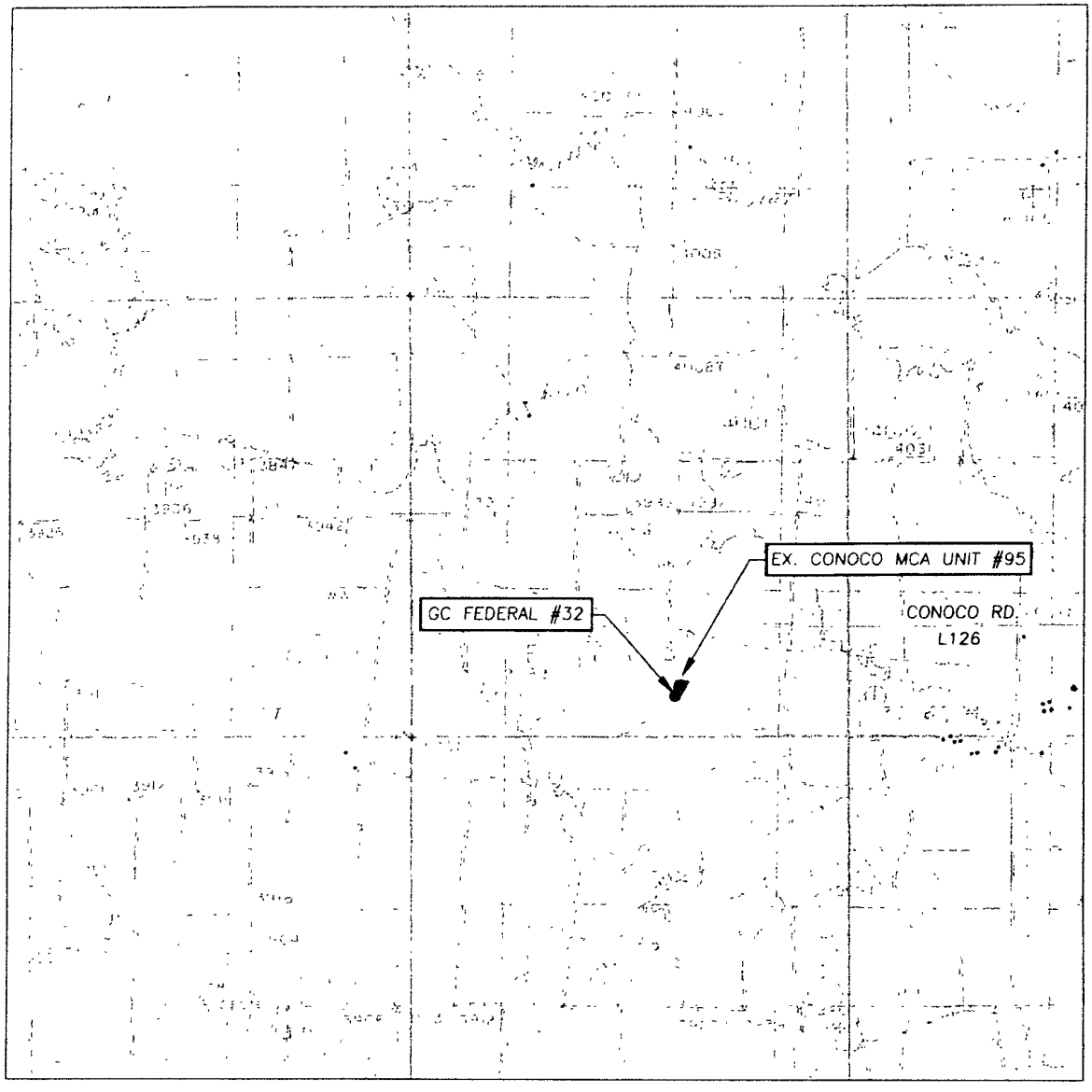
ELEVATION 3978'

OPERATOR COG OPERATING, LLC

LEASE GC FEDERAL


PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(505) 393-3117

# LOCATION VERIFICATION MAP




SCALE: 1" = 2000'

CONTOUR INTERVAL:
MALJAMAR, N.M. – 10'

SEC. 20 TWP. 17-S RGE. 32-E

SURVEY N.M.P.M.

COUNTY LEA STATE NEW MEXICO

DESCRIPTION 485' FSL & 2065' FEL

ELEVATION 3978'

OPERATOR COG OPERATING, LLC

LEASE GC FEDERAL

U.S.G.S. TOPOGRAPHIC MAP
MALJAMAR, N.M.

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(505) 393-3117

COG Operating LLC
Master Drilling Plan Revised 3-25-08
Maljamar ; Yeso
Use for Sections 3-35, T17S, R32E
Lea County, NM

# MASTER DRILLING PROGRAM

## 1. Geologic Name of Surface Formation

Quaternary

## 2. Estimated Tops of Important Geologic Markers:

| | |
|---|---|
| Quaternary | Surface |
| Top of Salt | 900' |
| Base of Salt | 1700' |
| Yates | 2000' |
| Seven Rivers | 2375' |
| Queen | 2975' |
| Grayburg | 3475' |
| San Andres | 3775' |
| Glorietta | 5225' |
| Yeso Group | 5325' |

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

| | | |
|---|---|---|
| Water Sand | 150' | Fresh Water |
| Grayburg | 3475' | Oil/Gas |
| San Andres | 3775' | Oil/Gas |
| Glorietta | 5225' | Oil/Gas |
| Yeso Group | 5325' | Oil/Gas |

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to 650' 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 ~~2100'~~ and circulating cement back to the surface. Any shallower zones above TD, which contain commercial quantities of oil and/or gas, will have cement circulated across them by cementing 5 1/2" production casing back to 200' into the intermediate casing, to be run at TD.

See COA

## 4. Casing Program

| Hole Size | Interval | OD Casing | Weight | Grade | Jt., Condition | burst/collapse/tension |
|---|---|---|---|---|---|---|
| 17 ½" | 0-650' | 13 3/8" | 48# | H-40 | ST&C/New | 6.03/2.578/10.32 |
| 11"or12 ¼" | 0-~~2100'~~ | 8 5/8" | 24or32# | J-55 | ST&C/New | 1.85/1.241/4.78 |
| 7 7/8" | 0-T.D. | 5 1/2" | 17# | J-55orL-80 | LT&C/New | 1.59/1.463/2.05 |

See COA

## 5. Cement Program

| | |
|---|---|
| 13 3/8" Surface Casing: | Class C, 500 sx lead, yield-1.98 + 200 sx tail, yield-1.32. |
| 8 5/8" Intermediate Casing: | 11" Hole: Class C, 500 sx lead, yield-2.45 + 200 sx tail, yield-1.32, back to surface. 12-1/4" Hole: Class C, 700 sx lead, yield-2.45 + 200 sx tail, yield-1.32, back to surface. |
| 5 1/2" Production Casing: | Class C, 700 sx Lead, yield-1.97 + 400 sx Tail, yield-1.37, to 200' minimum tie back to intermediate casing. |

## 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. 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. The BOP will be nippled up on the 13 3/8" surface casing with BOP equipment and tested together to 1000 psi by rig pump in one test. The BOP will then be nippled 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. All BOP's and accessory equipment will be tested to 2000 psi before drilling out of the intermediate casing. 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) will a 2000 psi WP rating.

See 10A →

## 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 |
|---|---|---|---|---|
| 0-650' | Fresh Water | 8.5 | 28 | N.C. |
| 650-2100' | Brine | 10 | 30 | N.C. |
| 2100'-TD | Cut Brine | 8.7-9.1 | 29 | 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**

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 8 5/8" casing shoe.

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 hold pressure is 2300 psig. Low levels of hydrogen sulfide have been monitored in producing wells in the area, so $H_2S$ may be present while drilling the well. 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 15 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

**Lea County, NM (NAD27 NME)**
**GC Federal #32**
**GC Federal #32**
**OH**

**Plan: Plan #1 - 7-7/8" Hole**

# Standard Planning Report

**18 September, 2008**

Scientific Drilling
Directional Drilling Operations

| | | | |
|---|---|---|---|
| **Database:** | EDM 2003 16 Single User Db | **Local Co-ordinate Reference:** | Well GC Federal #32 |
| **Company:** | COG Operating | **TVD Reference:** | Ground Elev @ 3978 00ft (Rig ?) |
| **Project:** | Lea County, NM (NAD27 NME) | **MD Reference:** | Ground Elev @ 3978 00ft (Rig ?) |
| **Site:** | GC Federal #32 | **North Reference:** | Grid |
| **Well:** | GC Federal #32 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #1 - 7-7/8" Hole | | |

**Project** Lea County, NM (NAD27 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** GC Federal #32

| | | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 660,320 400 ft | **Latitude:** | 32° 48' 50 808 N |
| **From:** | Map | **Easting:** | 668,083 100 ft | **Longitude:** | 103° 47' 10 446 W |
| **Position Uncertainty:** | 0 00 ft | **Slot Radius:** | " | **Grid Convergence:** | 0 30 ° |

**Well** GC Federal #32

| | | | | | | |
|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | 0 00 ft | **Northing:** | 660,320 400 ft | **Latitude:** | 32° 48' 50 808 N |
| | **+E/-W** | 0 00 ft | **Easting:** | 668,083 100 ft | **Longitude:** | 103° 47' 10 446 W |
| **Position Uncertainty** | | 0 00 ft | **Wellhead Elevation:** | ft | **Ground Level:** | 3,978 00 ft |

**Wellbore** OH

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|---|---|---|---|---|---|
| | IGRF200510 | 9/18/2008 | 8 05 | 60 78 | 49,244 |

**Design** Plan #1 - 7-7/8" Hole

**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 | 110 20 |

**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 | |
| 2,500 00 | 0 00 | 0 00 | 2,500 00 | 0 00 | 0 00 | 0.00 | 0 00 | 0 00 | 0 00 | |
| 2,873 72 | 5 61 | 110 20 | 2,873 13 | -6 31 | 17 14 | 1 50 | 1 50 | 29 49 | 110 20 | |
| 7,120 91 | 5 61 | 110 20 | 7,100 00 | -149 55 | 406 52 | 0 00 | 0 00 | 0 00 | 0 00 | PBHL-GC #32 |

Scientific Drilling
Directional Drilling Operations

| | | | |
|---|---|---|---|
| **Database:** | EDM 2003 16 Single User Db | **Local Co-ordinate Reference:** | Well GC Federal #32 |
| **Company:** | COG Operating | **TVD Reference:** | Ground Elev @ 3978 00ft (Rig ?) |
| **Project:** | Lea County, NM (NAD27 NME) | **MD Reference:** | Ground Elev @ 3978 00ft (Rig ?) |
| **Site:** | GC Federal #32 | **North Reference:** | Grid |
| **Well:** | GC Federal #32 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #1 - 7-7/8" Hole | | |

**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) |
|---|---|---|---|---|---|---|---|---|---|
| 0 00 | 0 00 | 0 00 | 0 00 | 0 00 | 0 00 | 0 00 | 0 00 | 0 00 | 0 00 |
| **HL-GC #32** | | | | | | | | | |
| 2,500 00 | 0 00 | 0 00 | 2,500 00 | 0 00 | 0 00 | 0 00 | 0 00 | 0 00 | 0 00 |
| **KOP Start 1.50°/100'** | | | | | | | | | |
| 2,600 00 | 1 50 | 110 20 | 2,599 99 | -0 45 | 1 23 | 1 31 | 1 50 | 1 50 | 0 00 |
| 2,700 00 | 3 00 | 110 20 | 2,699 91 | -1 81 | 4 91 | 5 23 | 1 50 | 1 50 | 0 00 |
| 2,800 00 | 4 50 | 110 20 | 2,799 69 | -4 07 | 11 05 | 11 77 | 1 50 | 1 50 | 0 00 |
| 2,873 72 | 5 61 | 110 20 | 2,873 13 | -6 31 | 17 14 | 18 27 | 1 50 | 1 50 | 0 00 |
| **EOC hold 5.61°** | | | | | | | | | |
| 2,900 00 | 5 61 | 110 20 | 2,899 28 | -7 19 | 19 55 | 20 83 | 0 00 | 0 00 | 0 00 |
| 3,000 00 | 5 61 | 110 20 | 2,998 80 | -10 57 | 28 72 | 30 60 | 0.00 | 0 00 | 0 00 |
| 3,100 00 | 5.61 | 110 20 | 3,098 32 | -13 94 | 37 89 | 40 37 | 0 00 | 0 00 | 0 00 |
| 3,200 00 | 5 61 | 110 20 | 3,197.84 | -17 31 | 47 06 | 50 14 | 0 00 | 0 00 | 0 00 |
| 3,300 00 | 5 61 | 110 20 | 3,297 37 | -20 68 | 56 22 | 59 91 | 0 00 | 0 00 | 0 00 |
| 3,400 00 | 5 61 | 110 20 | 3,396 89 | -24 06 | 65 39 | 69 68 | 0 00 | 0 00 | 0 00 |
| 3,500.00 | 5 61 | 110 20 | 3,496 41 | -27 43 | 74 56 | 79 45 | 0 00 | 0 00 | 0 00 |
| 3,600 00 | 5 61 | 110.20 | 3,595 93 | -30 80 | 83 73 | 89 21 | 0 00 | 0 00 | 0 00 |
| 3,700 00 | 5 61 | 110 20 | 3,695 45 | -34.17 | 92 90 | 98 98 | 0 00 | 0 00 | 0 00 |
| 3,800 00 | 5 61 | 110 20 | 3,794 97 | -37 55 | 102 06 | 108 75 | 0 00 | 0 00 | 0 00 |
| 3,900 00 | 5 61 | 110 20 | 3,894 50 | -40 92 | 111 23 | 118 52 | 0 00 | 0 00 | 0 00 |
| 4,000 00 | 5 61 | 110 20 | 3,994 02 | -44 29 | 120 40 | 128 29 | 0 00 | 0 00 | 0 00 |
| 4,100 00 | 5 61 | 110 20 | 4,093 54 | -47 66 | 129 57 | 138 06 | 0 00 | 0 00 | 0 00 |
| 4,200 00 | 5 61 | 110 20 | 4,193 06 | -51 04 | 138 73 | 147 82 | 0 00 | 0 00 | 0 00 |
| 4,300 00 | 5 61 | 110 20 | 4,292.58 | -54 41 | 147 90 | 157 59 | 0 00 | 0 00 | 0 00 |
| 4,400 00 | 5 61 | 110 20 | 4,392 10 | -57 78 | 157 07 | 167 36 | 0 00 | 0 00 | 0 00 |
| 4,500 00 | 5 61 | 110 20 | 4,491 63 | -61 15 | 166 24 | 177 13 | 0 00 | 0 00 | 0 00 |
| 4,600 00 | 5 61 | 110 20 | 4,591 15 | -64 53 | 175 41 | 186 90 | 0 00 | 0 00 | 0 00 |
| 4,700.00 | 5 61 | 110 20 | 4,690 67 | -67 90 | 184.57 | 196 67 | 0 00 | 0 00 | 0 00 |
| 4,800 00 | 5 61 | 110 20 | 4,790 19 | -71 27 | 193 74 | 206 43 | 0 00 | 0 00 | 0 00 |
| 4,900 00 | 5 61 | 110 20 | 4,889 71 | -74 65 | 202 91 | 216 20 | 0 00 | 0 00 | 0 00 |
| 5,000 00 | 5 61 | 110 20 | 4,989.24 | -78 02 | 212 08 | 225 97 | 0 00 | 0 00 | 0 00 |
| 5,100 00 | 5.61 | 110 20 | 5,088 76 | -81 39 | 221 24 | 235 74 | 0 00 | 0 00 | 0 00 |
| 5,200 00 | 5 61 | 110 20 | 5,188 28 | -84 76 | 230 41 | 245 51 | 0 00 | 0 00 | 0 00 |
| 5,300 00 | 5 61 | 110 20 | 5,287 80 | -88 14 | 239 58 | 255 28 | 0 00 | 0 00 | 0 00 |
| 5,400 00 | 5 61 | 110 20 | 5,387 32 | -91 51 | 248 75 | 265 04 | 0 00 | 0 00 | 0 00 |
| 5,500 00 | 5 61 | 110 20 | 5,486 84 | -94 88 | 257.91 | 274 81 | 0 00 | 0 00 | 0 00 |
| 5,600 00 | 5.61 | 110 20 | 5,586 37 | -98 25 | 267 08 | 284 58 | 0 00 | 0 00 | 0 00 |
| 5,700 00 | 5 61 | 110 20 | 5,685 89 | -101 63 | 276 25 | 294 35 | 0 00 | 0 00 | 0 00 |
| 5,800 00 | 5 61 | 110 20 | 5,785 41 | -105 00 | 285 42 | 304 12 | 0 00 | 0 00 | 0 00 |
| 5,900 00 | 5 61 | 110 20 | 5,884 93 | -108 37 | 294 59 | 313 89 | 0 00 | 0 00 | 0 00 |
| 6,000 00 | 5 61 | 110 20 | 5,984 45 | -111 74 | 303 75 | 323 66 | 0 00 | 0 00 | 0 00 |
| 6,100 00 | 5 61 | 110 20 | 6,083 97 | -115 12 | 312.92 | 333 42 | 0 00 | 0.00 | 0 00 |
| 6,200 00 | 5 61 | 110 20 | 6,183 50 | -118 49 | 322 09 | 343 19 | 0.00 | 0 00 | 0 00 |
| 6,300 00 | 5 61 | 110 20 | 6,283 02 | -121 86 | 331 26 | 352 96 | 0 00 | 0 00 | 0 00 |
| 6,400 00 | 5 61 | 110 20 | 6,382 54 | -125 23 | 340 42 | 362 73 | 0 00 | 0 00 | 0 00 |
| 6,500 00 | 5 61 | 110 20 | 6,482 06 | -128 61 | 349 59 | 372 50 | 0 00 | 0 00 | 0 00 |
| 6,600 00 | 5 61 | 110 20 | 6,581 58 | -131 98 | 358 76 | 382 27 | 0 00 | 0 00 | 0 00 |
| 6,700 00 | 5 61 | 110 20 | 6,681 10 | -135 35 | 367 93 | 392 03 | 0 00 | 0 00 | 0 00 |
| 6,800 00 | 5 61 | 110 20 | 6,780 63 | -138 72 | 377 10 | 401 80 | 0 00 | 0 00 | 0 00 |
| 6,900 00 | 5 61 | 110 20 | 6,880 15 | -142 10 | 386 26 | 411 57 | 0 00 | 0 00 | 0 00 |
| 7,000.00 | 5 61 | 110 20 | 6,979 67 | -145 47 | 395 43 | 421 34 | 0 00 | 0 00 | 0 00 |
| 7,100 00 | 5 61 | 110 20 | 7,079 19 | -148 84 | 404 60 | 431 11 | 0 00 | 0 00 | 0 00 |
| 7,120 91 | 5 61 | 110 20 | 7,100 00 | -149 55 | 406 52 | 433 15 | 0 00 | 0 00 | 0 00 |

| | | | |
|---|---|---|---|
| **Database:** | EDM 2003 16 Single User Db | **Local Co-ordinate Reference:** | Well GC Federal #32 |
| **Company:** | COG Operating | **TVD Reference:** | Ground Elev @ 3978 00ft (Rig ?) |
| **Project:** | Lea County, NM (NAD27 NME) | **MD Reference:** | Ground Elev @ 3978 00ft (Rig ?) |
| **Site:** | GC Federal #32 | **North Reference:** | Grid |
| **Well:** | GC Federal #32 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #1 - 7-7/8" Hole | | |

**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) |
|---|---|---|---|---|---|---|---|---|---|
| **PBHL-GC #32** | | | | | | | | | |

**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 |
|---|---|---|---|---|---|---|---|---|---|
| HL-GC #32 | 0 00 | 0 00 | 0 00 | -153 00 | 415 90 | 660,167 400 | 668,499 000 | 32° 48' 49 273 N | 103° 47' 5 582 W |
| - plan misses by 443 15ft at 0 00ft MD (0 00 TVD, 0 00 N, 0 00 E) | | | | | | | | | |
| - Rectangle (sides W0 00 H400 00 D0 00) | | | | | | | | | |
| PBHL-GC #32 | 0 00 | 0 00 | 7,100 00 | -149 55 | 406 52 | 660,170 853 | 668,489 615 | 32° 48' 49 308 N | 103° 47' 5 692 W |
| - plan hits target | | | | | | | | | |
| - Point | | | | | | | | | |

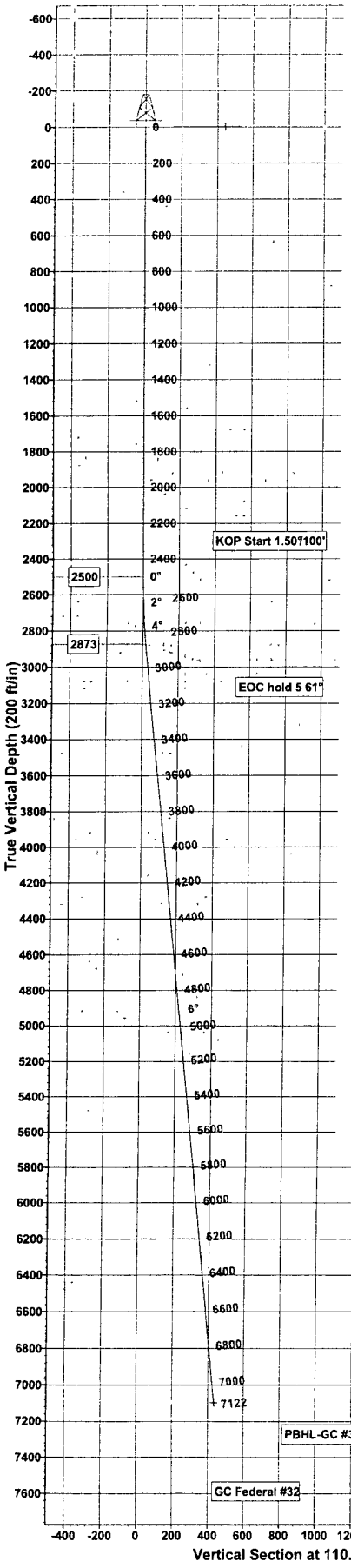
**Plan Annotations**

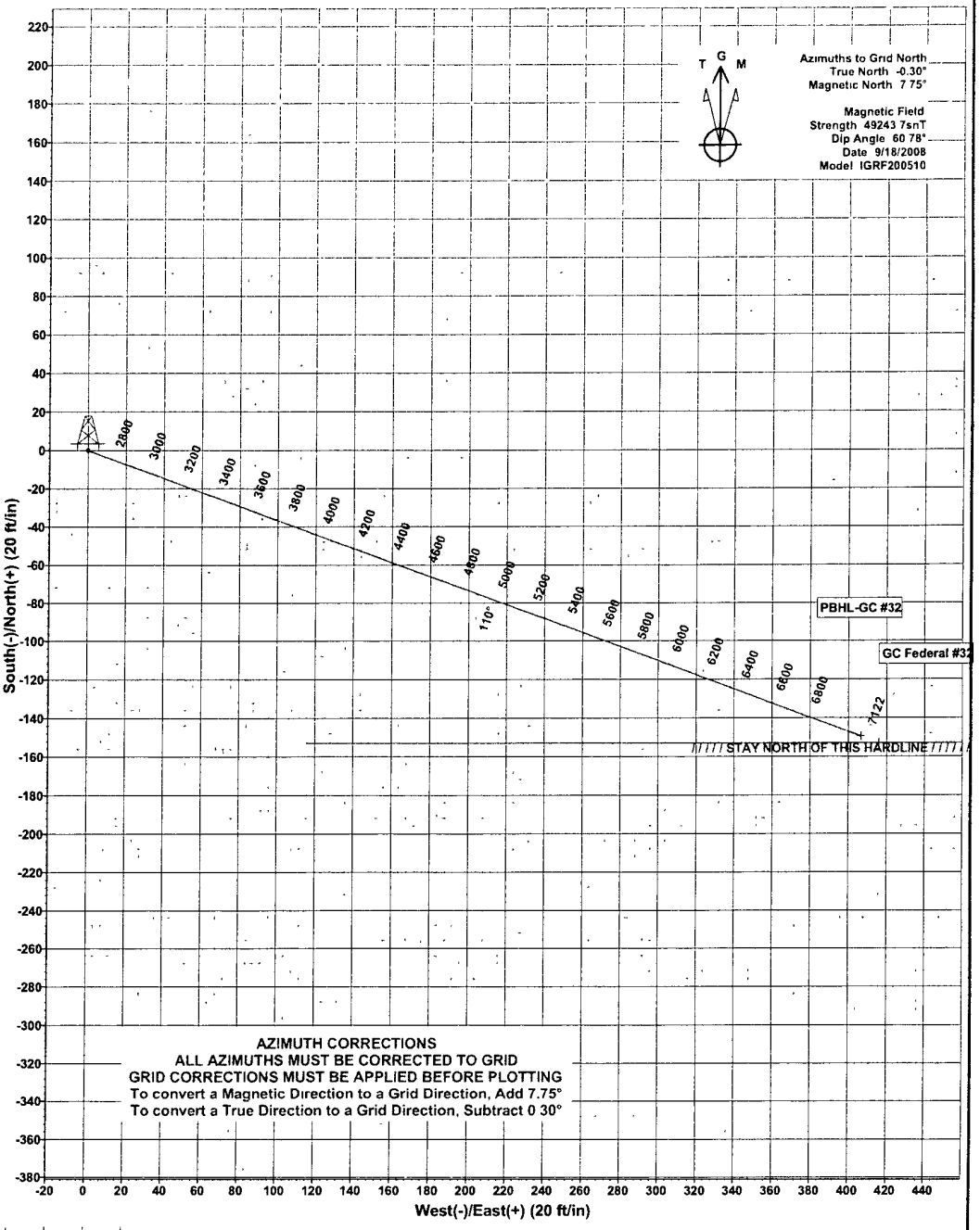
| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates +N/-S (ft) | Local Coordinates +E/-W (ft) | Comment |
|---|---|---|---|---|
| 2,500 00 | 2,500 00 | 0 00 | 0 00 | KOP Start 1 50°/100' |
| 2,873 72 | 2,873 13 | -6 31 | 17 14 | EOC hold 5 61° |

# COG Operating

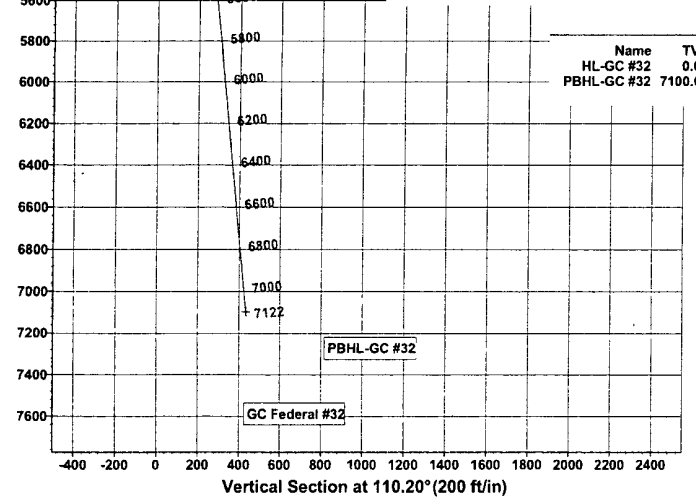
Scientific Drilling for COG Operating
Site: Lea County, NM (NAD27 NME)
Well: GC Federal #32
Wellbore. OH
Design: Plan #1 - 7-7/8" Hole

Scientific Drilling
Directional Drilling Operations




AZIMUTH CORRECTIONS
ALL AZIMUTHS MUST BE CORRECTED TO GRID
GRID CORRECTIONS MUST BE APPLIED BEFORE PLOTTING
To convert a Magnetic Direction to a Grid Direction, Add 7.75°
To convert a True Direction to a Grid Direction, Subtract 0 30°




WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

| Name | TVD | +N/-S | +E/-W | Northing | Easting | Latitude | Longitude | Shape |
|---|---|---|---|---|---|---|---|---|
| HL-GC #32 | 0.00 | -153.00 | 415 90 | 660167.400 | 668499.000 | 32°4 8' 49.273 N | 103°47' 5 582 W | Rectangle (Sides· L0 00 W400 00 |
| PBHL-GC #32 | 7100.00 | -149.55 | 406 52 | 660170 853 | 668489.615 | 32°48' 49.308 N | 103°47' 5 692 W | Point |

SECTION DETAILS

| Sec | MD | Inc | Azi | TVD | +N/-S | +E/-W | DLeg | TFace | VSec | Target |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0 00 | 0 00 | |
| 2 | 2500.00 | 0.00 | 0.00 | 2500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 3 | 2873 72 | 5 61 | 110 20 | 2873.13 | -6.31 | 17.14 | 1 50 | 110 20 | 18 27 | |
| 4 | 7120.91 | 5 61 | 110 20 | 7100.00 | -149 55 | 406 52 | 0 00 | 0.00 | 433 15 | PBHL-GC #32 |

WELL DETAILS GC Federal #32

Ground Level: 3978.00

| +N/-S | +E/-W | Northing | Easting | Latitude | Longitude | Slot |
|---|---|---|---|---|---|---|
| 0 00 | 0.00 | 660320 400 | 668083.100 | 32°48' 50.808 N | 103°47 ' 10.446 W | |

PROJECT DETAILS: Lea County, NM (NAD27 NME)

Plan: Plan #1 - 7-7/8" Hole (GC Federal #32/OH)

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level

Created By: Julio Pina Date 18-Sep-08
Checked: _____ Date. _____
Reviewed: _____ Date: _____
Approved _____ Date. _____

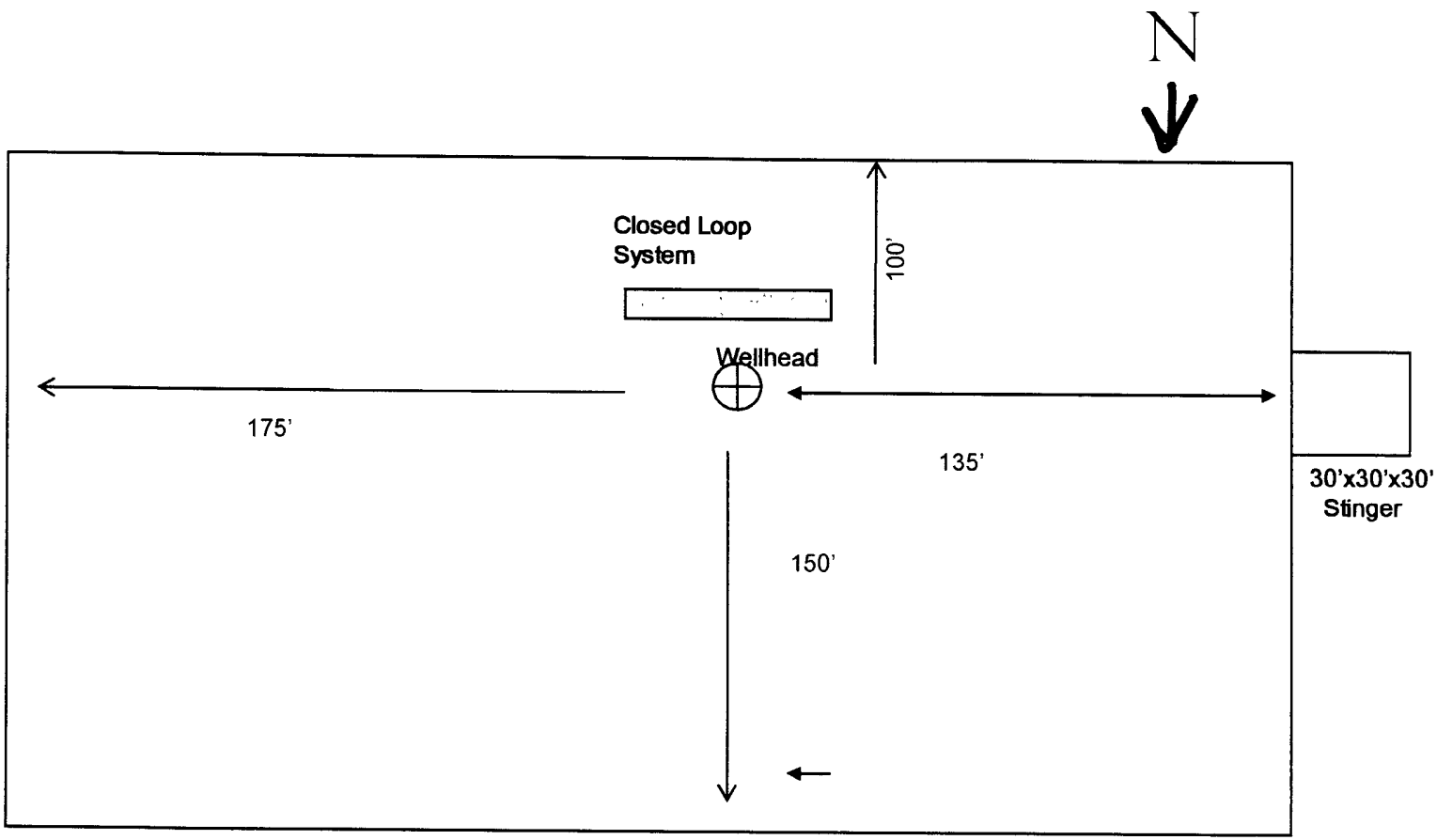



Exhibit 6

COG OPERATING, LLC

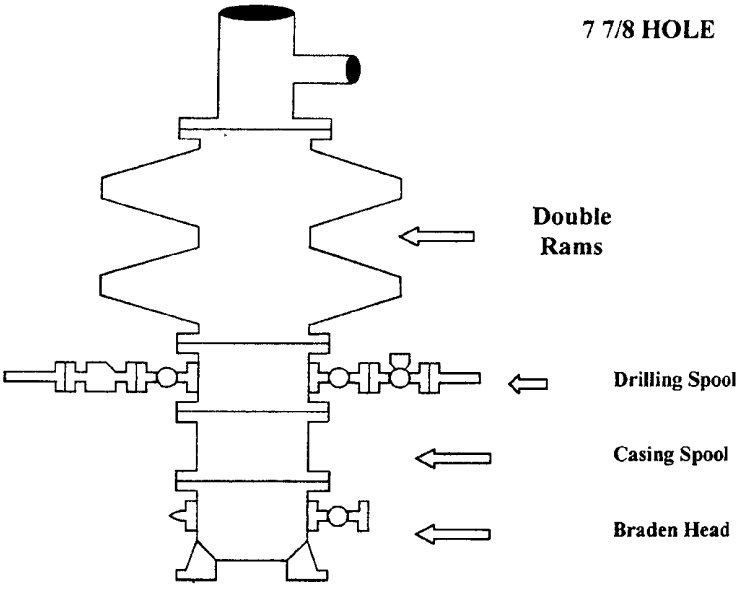
Rig Layout- Closed Loop System

Not To Scale

# COG Operating LLC

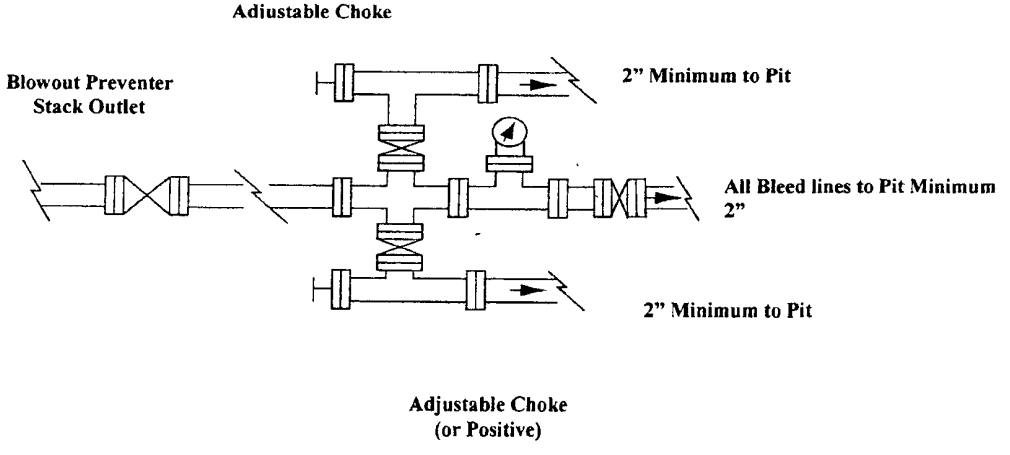
## Exhibit #9

## 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.

# 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 an 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 well 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

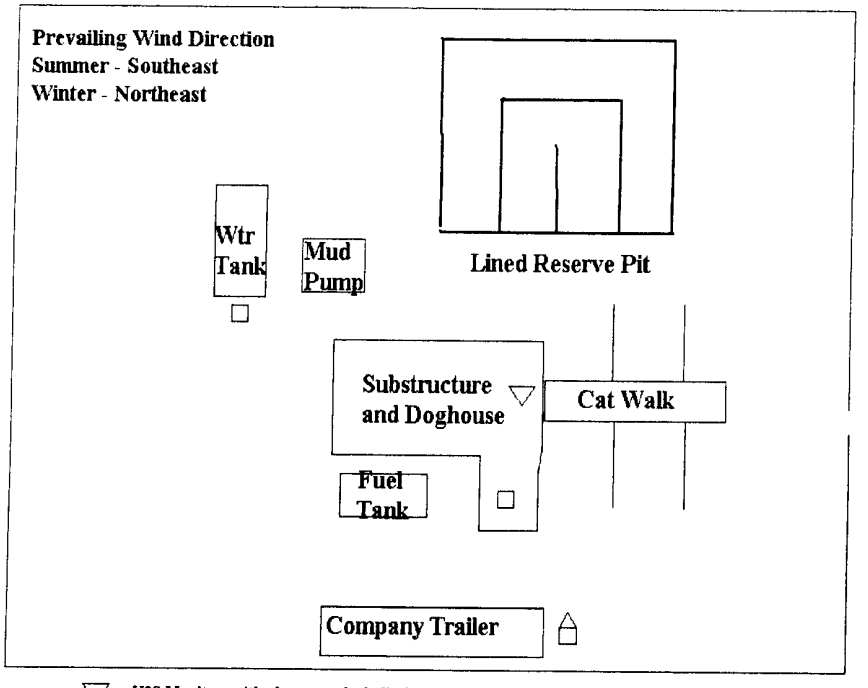
1. **BEARDS OR CONTACT LENSES NOT ALLOWED**
2. **HARD HATS REQUIRED**
3. **SMOKING IN DESIGNATED AREAS ONLY**
4. **BE WIND CONSCIOUS AT ALL TIMES**
5. **CHECK WITH COG OPERATING FOREMAN AT**

## 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

# DRILLING LOCATION
# H2S SAFETY EQUIPMENT
# Exhibit # 8



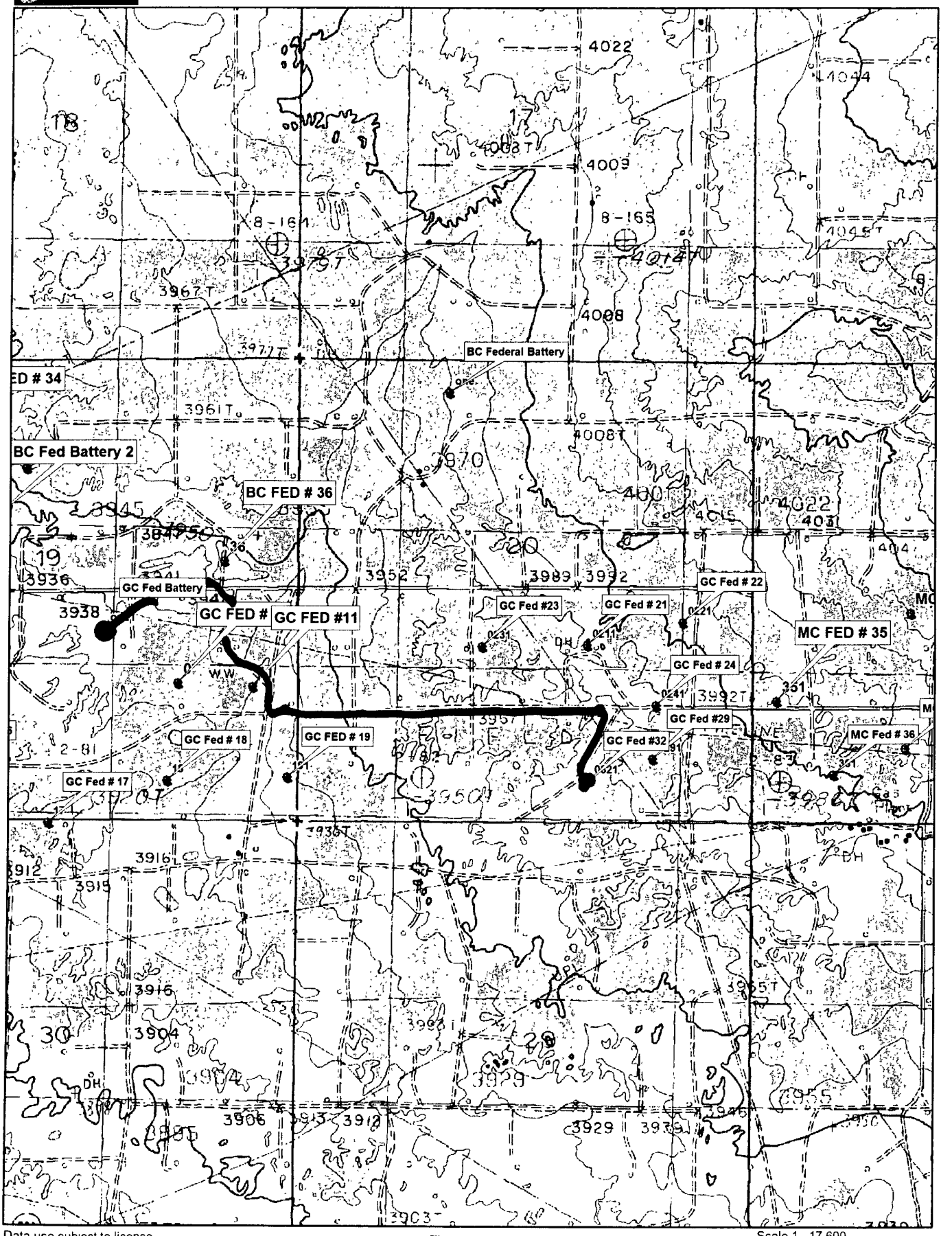

▽ H2S Monitors with alarms at the bell nipple

□ Wind Direction Indicators

△ Safe Briefing areas with caution signs and breathing equipment min 150 feet from

DeLORME

XMap® 5.2 Professional




Data use subject to license

© DeLorme XMap® 5 2 Professional

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TN

MN (8 1°E)

Scale 1 17.600

1" = 1,466.7 ft

Data Zoom 13-5

# PECOS DISTRICT
# CONDITIONS OF APPROVAL

| | |
|---|---|
| OPERATOR'S NAME: | COG OPERATING LLC |
| LEASE NO.: | LC-029405B |
| WELL NAME & NO.: | G C FEDERAL #32 |
| SURFACE HOLE FOOTAGE: | 485' FSL & 2065' FEL |
| BOTTOM HOLE FOOTAGE | 330' FSL & 1650' FEL |
| LOCATION: | Section 20, T. 17 S., R 32 E., NMPM |
| COUNTY: | Lea 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.

## I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

## II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

## III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

## IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

## V. SPECIAL REQUIREMENT(S)

**Mitigation Measures:** The mitigation measures include Pecos District Conditions of Approval, the standard stipulations for permanent resource roads, and the standard stipulation for the lesser prairie chicken.

Timing Limitation Stipulation/Condition of Approval for Lesser Prairie-Chicken: Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 ft. from the source of the noise.

**G C Federal # 32:** Closed loop system: Pit South V- Door West

# VI. CONSTRUCTION

## A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5972 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

## B. TOPSOIL

The operator shall stockpile the topsoil of the well pad. The topsoil shall not be used to backfill the reserve pit and will be used for interim and final reclamation.

## C. Closed Loop System

**G C Federal # 32:** Closed loop system: Pit South V- Door West

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

## D. FEDERAL MINERAL MATERIALS PIT

If the operator elects to surface the access road and/or well pad, mineral materials extracted during construction of the reserve pit may be used for surfacing the well pad and access road and other facilities on the lease.

Payment shall be made to the BLM prior to removal of any additional federal mineral materials from any site other than the reserve pit. Call the
Carlsbad Field Office at (575) 234-5972.

## E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.

The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

## F. ON LEASE ACCESS ROADS

**Road Width**
The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed thirty (30) feet.

**Surfacing**
Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

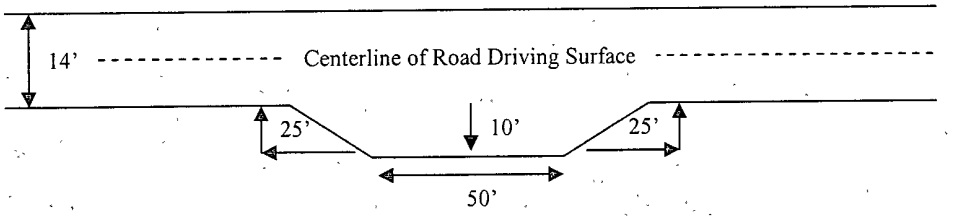
**Crowning**
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

**Ditching**
Ditching shall be required on the uphill side of the road.

Ditching shall be required on both sides of the road.

**Turnouts**
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:

**Standard Turnout – Plan View**

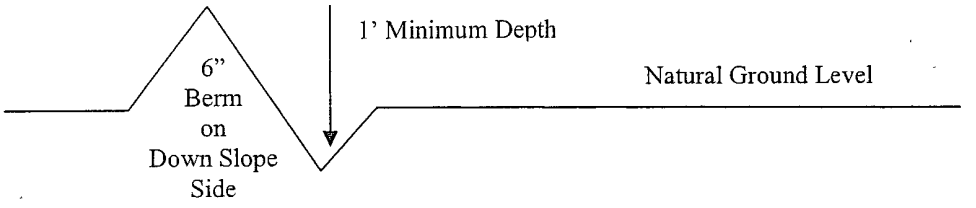



**Drainage**

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

**Cross Section of a Typical Lead-off Ditch**




All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

**Formula for Spacing Interval of Lead-off Ditches**

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

400 foot road with 4% road slope: $\frac{400'}{4\%} + 100' = 200'$ lead-off ditch interval

**Culvert Installations**
Appropriately sized culvert(s) shall be installed at the deep waterway channel flow crossing.

**Cattleguards**
An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s).

Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguard(s) that are in place and are utilized during lease operations.

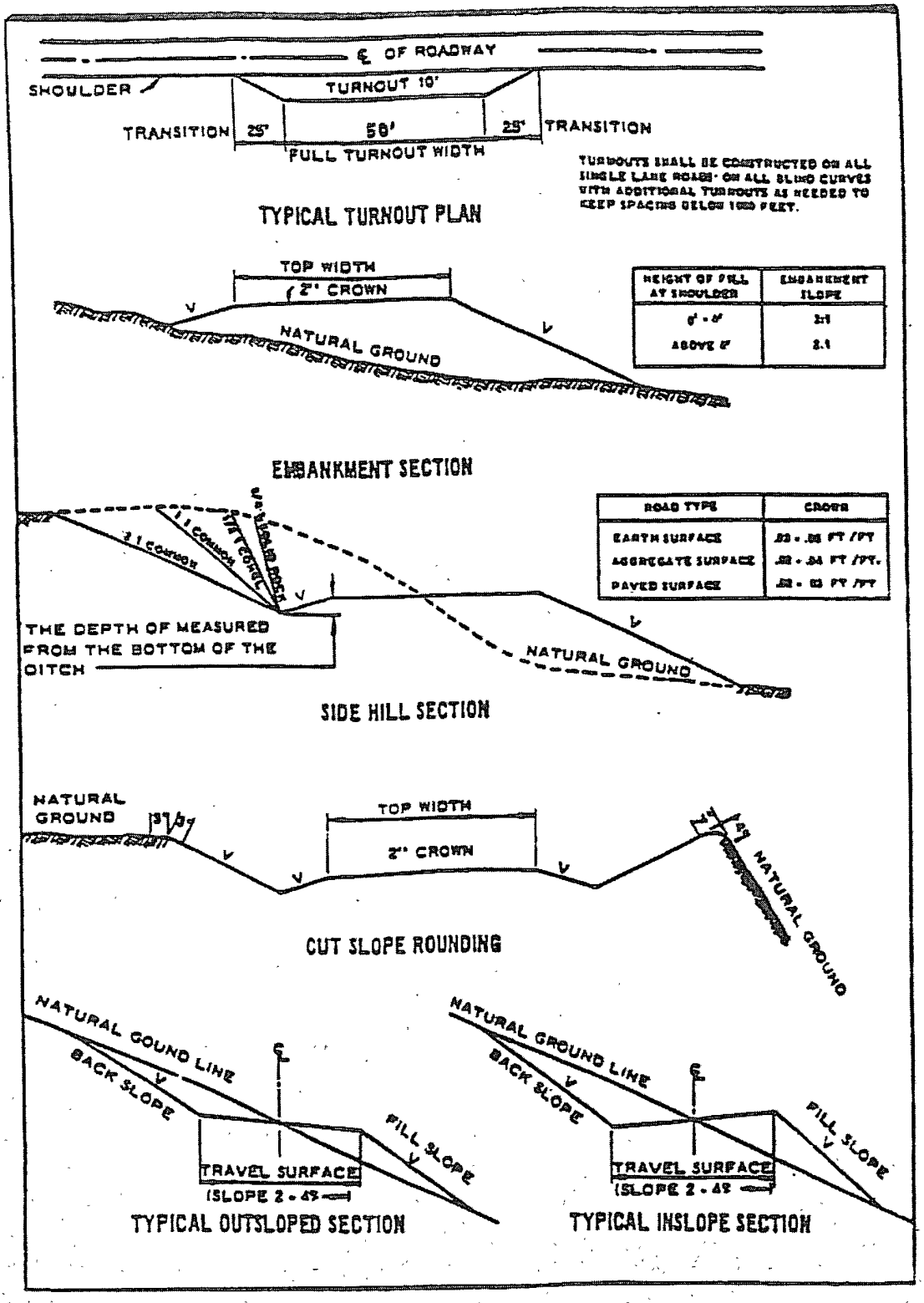
A gate shall be constructed and fastened securely to H-braces.

**Fence Requirement**
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).

**Public Access**
Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

Figure 1 – Cross Sections and Plans For Typical Road Sections



# VII. DRILLING

## A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified a minimum of 4 hours in advance for a representative to witness:

a. Spudding well
b. Setting and/or Cementing of all casing strings
c. BOPE tests

☒ **Lea County**
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240,
(575) 393-3612

1. A Hydrogen Sulfide (H2S) Drilling Plan should be activated 500 feet prior to drilling into the **Grayburg** formation. **Hydrogen Sulfide has been reported through out the township measuring 100-1400 ppm in the gas stream. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.**

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.

## B. CASING

**Changes to the approved APD casing and cement program require submitting a sundry and receiving approval prior to work. Failure to obtain approval prior to work will result in an Incident of Non-Compliance being issued.**

**Centralizers required on surface casing per Onshore Order 2.III.B.1.f.**

**Wait on cement (WOC) time for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. See individual casing strings for details regarding lead cement slurry requirements.**

**No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.**

**Possible lost circulation in the Grayburg and San Andres formations.**
**Possible water and brine flows in the Salado and Artesia Group.**

1. The **13-3/8** inch surface casing shall be set **a minimum of 25 feet into the Rustler Anhydrite at approximately 650** feet and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with a surface log readout will be used or a cement bond log shall be run to verify the top of the cement.

    b. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

    c. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **8-5/8** inch intermediate casing is:

    ☒ Cement to surface. If cement does not circulate see B.1.a-c above. **This casing is to be set in the Tansill formation at approximately 1900'.**

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:

    ☒ Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

## C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    a. The tests shall be done by an independent service company.

    b. The results of the test shall be reported to the appropriate BLM office.

c. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.

d. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug.

e. A variance to test the surface casing and BOP/BOPE **(entire system)** to the reduced pressure of **1000** psi with the rig pumps is approved. **In order to meet BLM requirements, the test cannot be properly done in one step.**

## D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

**WWI 102608**

# VIII. PRODUCTION (POST DRILLING)

## A. WELL STRUCTURES & FACILITIES

**Placement of Production Facilities**
Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

**Containment Structures**
The containment structure shall be constructed to hold the capacity of the entire contents of the largest tank, plus 24 hour production, unless more stringent protective requirements are deemed necessary by the Authorized Officer.

**Painting Requirement**
All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color
Shale Green, Munsell Soil Color Chart # 5Y 4/2

## B. PIPELINES

BLM Serial Number:
Company Reference:
Well # & Name:

STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES

**A copy of the APD and attachments, including stipulations, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.**

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the

authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to activity of the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. The holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2883.1-4. The holder shall be held to a standard of strict liability for damage or injury to the United States resulting from pipe rupture, fire, or spills caused or substantially aggravated by any of the following within the right-of-way or permit area:

a. Activities of the holder including, but not limited to construction, operation, maintenance, and termination of the facility.

b. Activities of other parties including, but not limited to:

(1) Land clearing.
(2) Earth-disturbing and earth-moving work.
(3) Blasting.
(4) Vandalism and sabotage.

c. Acts of God.

The maximum limitation for such strict liability damages shall not exceed one million dollars ($1,000,000) for any one event, and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction in which the damage or injury occurred.

This section shall not impose strict liability for damage or injury resulting primarily from an act of war or from the negligent acts or omissions of the United States.

5. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil, salt water, or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil, salt water, or other pollutant, wherever found, shall be the responsibility of the holder, regardless of fault. Upon failure of the holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he

deems necessary to control and clean up the discharge and restore the area, including, where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve the holder of any responsibility as provided herein.

6. All construction and maintenance activity will be confined to the authorized right-of-way width of **25** feet.

7. No blading or clearing of any vegetation will be allowed unless approved in writing by the Authorized Officer.

8. The holder shall install the pipeline on the surface in such a manner that will minimize suspension of the pipeline across low areas in the terrain. In hummocky of duney areas, the pipeline will be "snaked" around hummocks and dunes rather then suspended across these features.

9. The pipeline shall be buried with a minimum of **24** inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.

10. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. Excluding the pipe, all above-ground structures not subject to safety requirement shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2; designated by the Rocky Mountain Five State Interagency Committee.

13. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. Signs will be maintained in a legible condition for the life of the pipeline.

14. The holder shall not use the pipeline route as a road for purposes other than routine

maintenance as determined necessary by the Authorized Officer in consultation with the holder. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

15. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the authorized officer after consulting with the holder.

(March 1989)

# IX. INTERIM RECLAMATION & RESERVE PIT CLOSURE

## A. INTERIM RECLAMATION

If the well is a producer, interim reclamation shall be conducted on the well site in accordance with the orders of the Authorized Officer. The operator shall submit a Sundry Notices and Reports on Wells (Notice of Intent), Form 3160-5, prior to conducting interim reclamation.

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

The operators should work with BLM surface management specialists to devise the best strategies to reduce the size of the location. Any reductions should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

BLM SERIAL #:
COMPANY REFERENCE:
WELL # & NAME:

Seed Mixture 2, for Sandy Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law (s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The see mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

| Species | lb/acre |
|---|---|
| Sand dropseed (Sporobolus cryptandrus) | 1.0 |
| Sand love grass (Eragrostis trichodes) | 1.0 |
| Plains bristlegrass (Setaria macrostachya) | 2.0 |

*Pounds of pure live seed:

Pounds of seed **x** percent purity **x** percent germination = pounds pure live seed
(Insert Seed Mixture Here)

## X. FINAL ABANDONMENT & REHABILITATION REQUIREMENTS

Upon abandonment of the well and/or when the access road is no longer in service the Authorized Officer shall issue instructions and/or orders for surface reclamation and restoration of all disturbed areas.

On private surface/federal mineral estate land the reclamation procedures on the road and well pad shall be accomplished in accordance with the private surface land owner agreement.