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V-Deer north

ATS-08-923

OCD-ARTESIA

DEC 16 2008

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Form 3160-3
(April 2004)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

| | | |
|--|---|---|
| 1a. Type of work <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER | | 5. Lease Serial No. NMLC - 029418 (b) |
| 1b. Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone | | 6. If Indian, Allottee or Tribe Name |
| 2. Name of Operator COG Operating LLC agent | | 7. If Unit or CA Agreement, Name and No. |
| 3a. Address 550 W. Texas Ave., Suite 1300 Midland, TX 79701 | | 8. Lease Name and Well No. TEX MACK 11 FEDERAL #5 |
| 3b. Phone No. (include area code) 432-685-4385 | | 9. API Well No. 30-015- 34847 |
| 4. Location of Well (Report location clearly and in accordance with any State requirements *) At surface 800' FSL & 600' FEL, Unit P At proposed prod zone 990' FSL & 990' FEL, Unit P | | 10. Field and Pool, or Exploratory Fren; Glorieta-Yeso 26770 |
| 14. Distance in miles and direction from nearest town or post office* 6 miles East of Loco Hills, NM | | 11. Sec., T. R. M. or Blk and Survey or Area Sec 11 T17S R31E |
| 15. Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig unit line, if any) 600' | 16. No. of acres in lease 1200 | 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 6600 <i>HVD</i> 16631' <i>MD</i> | 20. BLM/BIA Bond No. on file NMB-00215 |
| 21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3948' GR | 22. Approximate date work will start* 11/25/2008 | 23. Estimated duration 15 days |

24. Attachments

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

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

| | | |
|---|--|----------------------------|
| 25. Signature <i>Robyn Odom</i> | Name (Printed/Typed) Robyn Odom | Date 10/23/2008 |
| Title Agent | | |
| Approved by (Signature) <i>/s/ Don Peterson</i> | Name (Printed/Typed) <i>/s/ Don Peterson</i> | Date DEC 12 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

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Approval Subject to General Requirements
& Special Stipulations Attached

ENTERED
12-17-08

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 30-015- 36847 | Pool Code 26770 | Pool Name FREN; GLORIETA-YESO |
| Property Code 37516 | Property Name TEX-MACK 11 FEDERAL | Well Number 5 |
| OGRID No. 229137 | Operator Name COG OPERATING, LLC | Elevation 3948' |

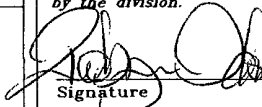
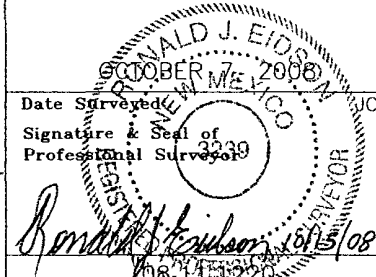
Surface Location

| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| P | 11 | 17-S | 31-E | | 800 | SOUTH | 600 | EAST | EDDY |

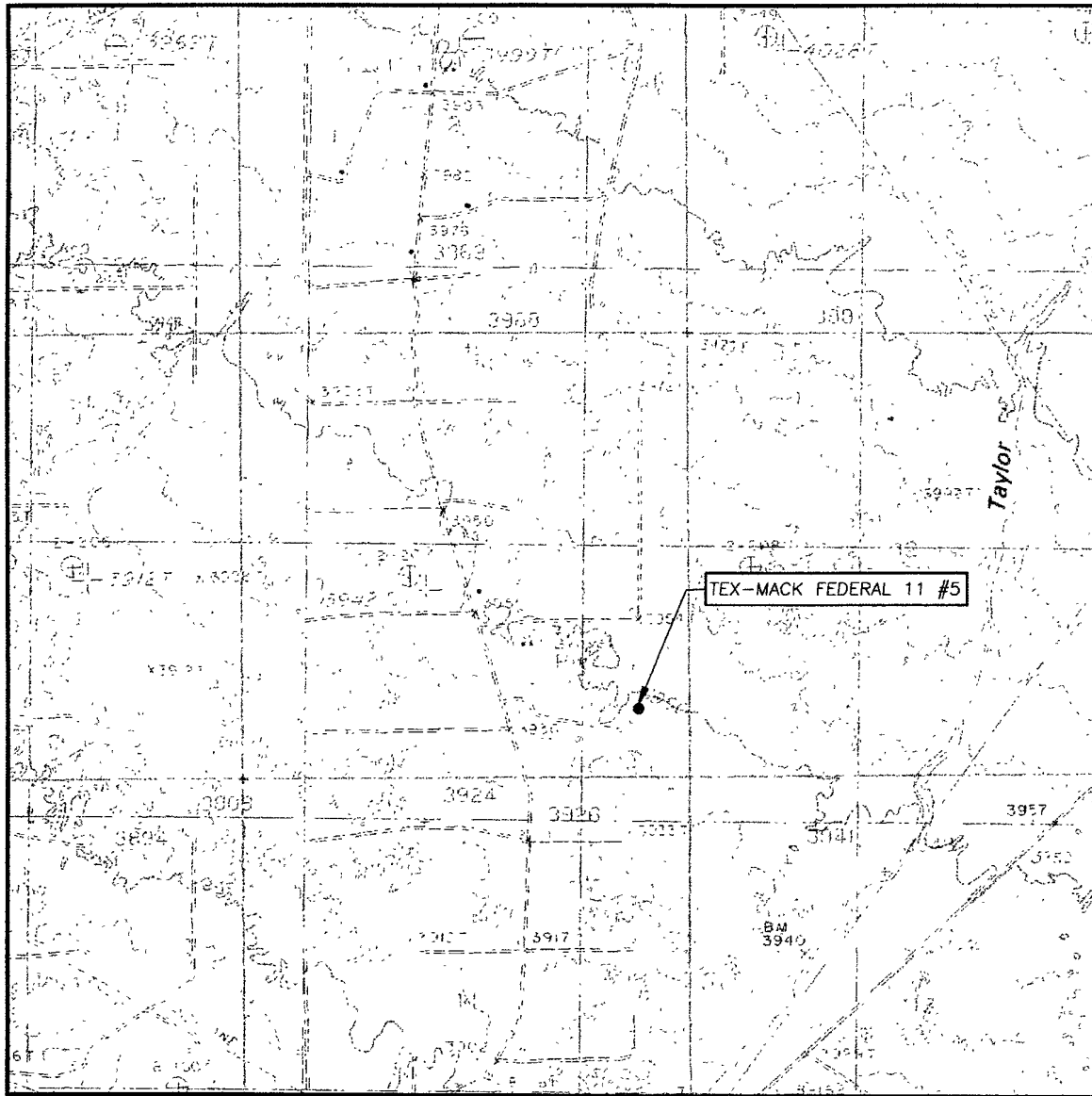
Bottom Hole Location If Different From Surface

| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|-----------------------|-----------------|--------------------|-----------|---------|---------------|------------------|---------------|----------------|--------|
| P | 11 | 17-S | 31-E | | 990 | SOUTH | 990 | EAST | EDDY |
| Dedicated Acres 40 | Joint or Infill | Consolidation Code | Order No. | | | | | | |

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

| | | |
|--|--|---|
| <p>GEODETIC COORDINATES NAD 27 NME SURFACE LOCATION</p> <p>Y=671119.3 N X=653616.6 E</p> <p>LAT.=32.843992° N LONG.=103.833155° W</p> <p>BOTTOM HOLE LOCATION</p> <p>Y=671306.7 N X=653225.6 E</p> <p>GRID AZ. = 295°35'55" HORZ. DIST. = 433.7'</p> | <p>DETAIL</p> <p>3949.4' 3952.2'</p> <p>600'</p> <p>OS.L.</p> <p>3947.1' 3946.1'</p> <p>B.H.O. 990'</p> <p>S.L. 600'</p> <p>SEE DETAIL</p> | <p>OPERATOR CERTIFICATION</p> <p>I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p> 10/16/2008 Signature Date Robyn Odom Printed Name</p> <p>SURVEYOR CERTIFICATION</p> <p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p> Date Surveyed Signature & Seal of Professional Surveyor Certificate No. GARY EIDSON 12641 RONALD J. EIDSON 3239</p> |
|--|--|---|

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

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

SEC. 11 TWP. 17-S RGE. 31-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 800' FSL & 600' FEL

ELEVATION 3948'

OPERATOR COG OPERATING, LLC

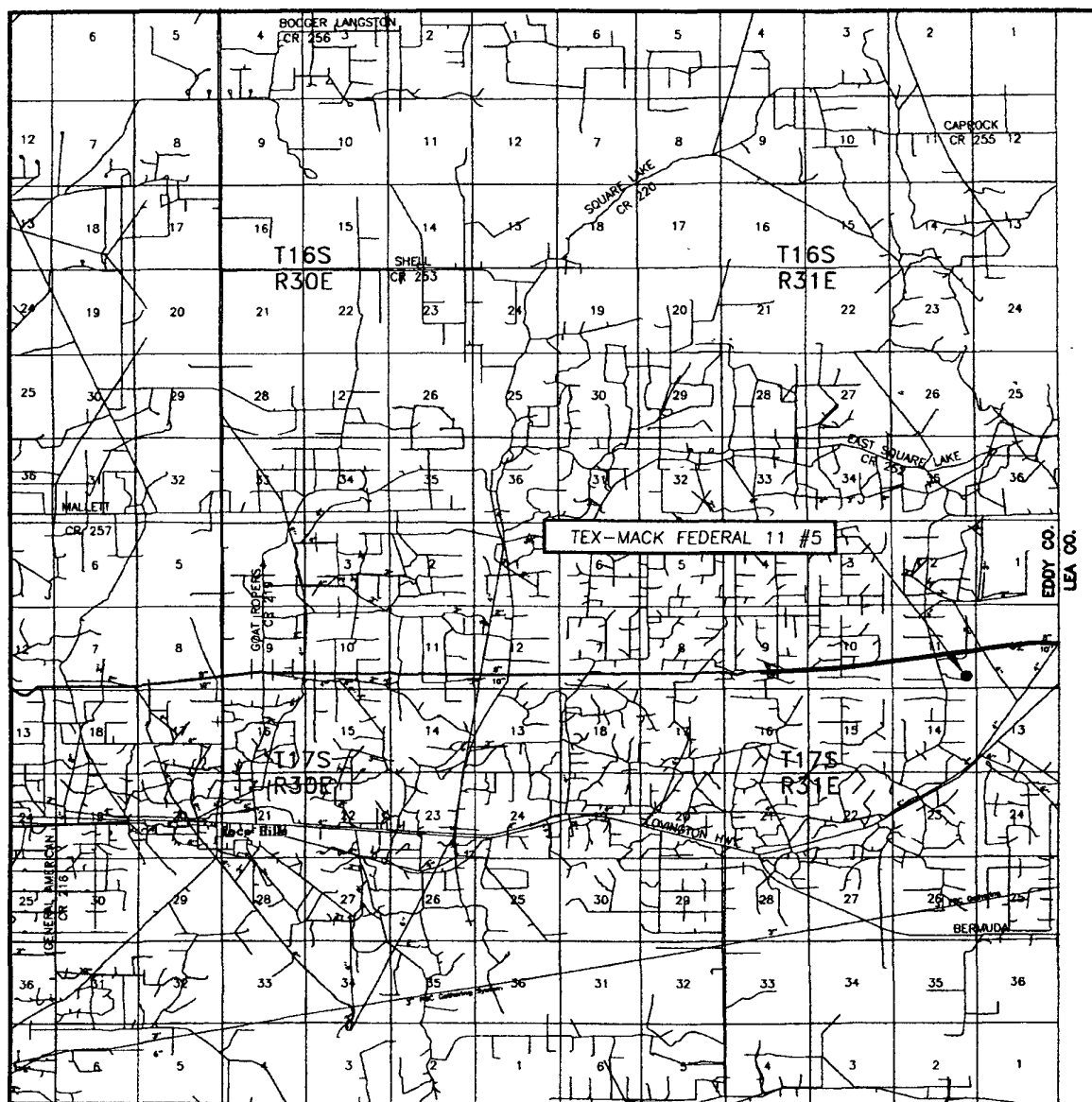
LEASE TEX-MACK 11 FEDERAL

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

VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 11 TWP. 17-S RGE. 31-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 800' FSL & 600' FEL

ELEVATION 3948'

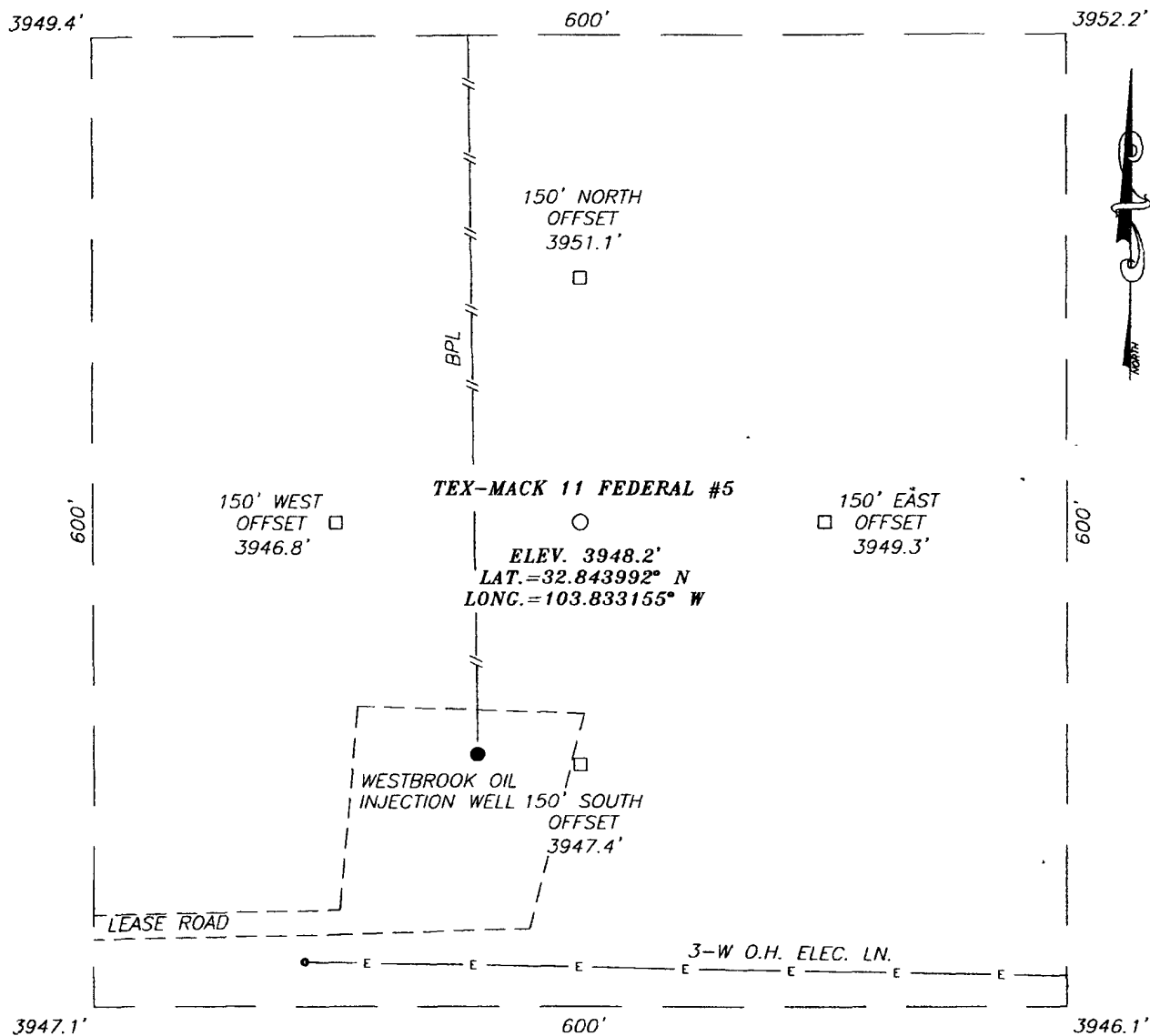
OPERATOR COG OPERATING, LLC

LEASE TEX-MACK FEDERAL 11



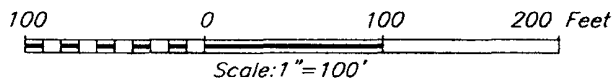
PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(505) 393-3117

SECTION 11, TOWNSHIP 17 SOUTH, RANGE 31 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO



DIRECTIONS TO LOCATION

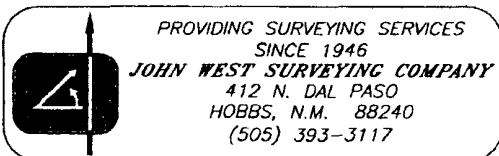
FROM THE INTERSECTION OF HWY. #82 AND CO. RD. #224 (RIPPLE RD.), GO SOUTHWEST ON HWY. #82 APPROX. 1.2 MILES TO A LEASE RD. TURN RIGHT AND GO NORTHWEST APPROX. 0.35 MILES; TURN RIGHT AND GO NORTHEAST APPROX. 0.5 MILES; VEER LEFT AND GO NORTH APPROX. 0.9 MILES; TURN RIGHT AND GO EAST APPROX. 0.3 MILES TO EXISTING WELL PAD. THIS LOCATION IS APPROX. 150 FEET NORTH OF WELL PAD.

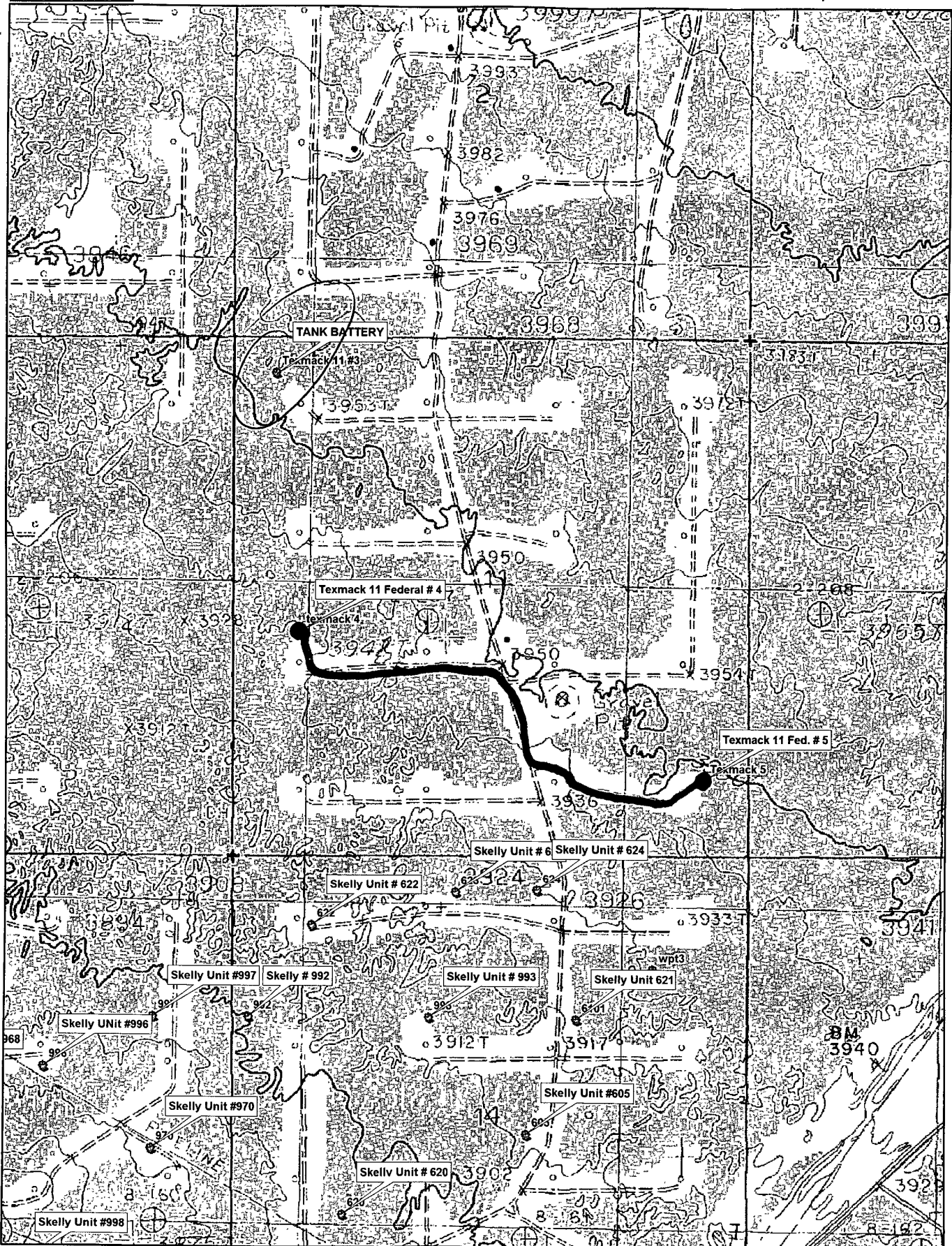


COG OPERATING, LLC

TEX-MACK 11 FEDERAL #5 WELL
LOCATED 800 FEET FROM THE SOUTH LINE
AND 600 FEET FROM THE EAST LINE OF SECTION 11,
TOWNSHIP 17 SOUTH, RANGE 31 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.

| | |
|-------------------------|---------------------|
| Survey Date: 10/07/08 | Sheet 1 of 1 Sheets |
| W.O. Number: 08.11.1220 | Dr By: JC |
| Date: 10/14/08 | 08111220 |
| | Scale: 1"=100' |





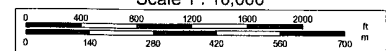
Data use subject to license.

© DeLorme XMap® 5.2 Professional.

www.delorme.com



Scale 1 : 16,000



1" = 1,333 3 ft

Data Zoom 13-6

MASTER DRILLING PROGRAM

1. Geologic Name of Surface Formation

Quaternary

2. Estimated Tops of Important Geologic Markers:

| | |
|--------------|---------|
| Quaternary | Surface |
| Top of Salt | 560' |
| Base of Salt | 1150' |
| Yates | 1770' |
| Seven Rivers | 2100' |
| Queen | 2715' |
| Grayburg | 3100' |
| San Andres | 3450' |
| Glorietta | 4950' |
| Yeso Group | 4995' |

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

| | | |
|------------|-------|-------------|
| Water Sand | 150' | Fresh Water |
| Grayburg | 3100' | Oil/Gas |
| San Andres | 3450' | Oil/Gas |
| Glorieta | 4950' | Oil/Gas |
| Yeso Group | 4995' | Oil/Gas |

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to ~~450'~~ 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 ~~1800'~~ 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 200' into the intermediate casing, to be run at TD.

4. Casing Program

| Hole Size | Interval | OD Casing | Weight | Grade | Jt., Condition | Jt. | burst/collapse/tension |
|----------------|---------------------|-----------|-----------|-------|----------------|------|------------------------|
| 17 1/2" | 0- 450' | 13 3/8" | 48# | H-40 | New | ST&C | 8.71/3.724/14.91 |
| 11" or 12 1/4" | 0- 1800' | 8 5/8" | 24 or 32# | J-55 | New | ST&C | 2.91/1.46/5.65 |
| 7 7/8" | 0-T.D. | 5 1/2" | 17# | J-55 | New | LT&C | 1.71/1.574/2.20 |

5. Cement Program

13 3/8" Surface Casing: Class C, 500 sx, yield 1.32, back to surface

8 5/8" Intermediate Casing: 11" Hole: Class C, 400 sx lead, yield-2.45 + 200 sx tail, yield-1.32, back to surface.
12-1/4" Hole: Class C, 600 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

See COA → 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 nipped 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 nipped up on the 8 5/8" intermediate casing and tested by a third party to 2000 psi and used continuously until total depth is reached. 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.

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 |
|-----------|-------------|---------|-----------|-----------|
| 0-450' | Fresh Water | 8.5 | 28 | N.C. |
| 450-1800' | Brine | 10 | 30 | N.C. |
| 1800'-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 1/2" 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 H₂S 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 12 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

Eddy County, NM (NAN27 NME)

Tex Mack 11 Fed #5

Tex Mack 11 Fed #5

OH

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

Standard Planning Report

06 November, 2008



Scientific Drilling
Directional Drilling Operations

Scientific Drilling

Planning Report



Database: EDM 2003 16 Single User Db
Company: COG Operating
Project: Eddy County, NM (NAN27 NME)
Site: Tex Mack 11 Fed #5
Well: Tex Mack 11 Fed #5
Wellbore: OH
Design: Plan #1 - 7-7/8" Hole

Local Co-ordinate Reference: Well Tex Mack 11 Fed #5
TVD Reference: Ground Elev @ 3948 00ft (Rig ?)
MD Reference: Ground Elev @ 3948 00ft (Rig ?)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Project: Eddy County, NM (NAN27 NME)

Map System: US State Plane 1927 (Exact solution)
Geo Datum: NAD 1927 (NADCON CONUS)
Map Zone: New Mexico East 3001

System Datum: Mean Sea Level

Site: Tex Mack 11 Fed #5

| | | |
|--------------------------------------|---------------------------------|-------------------------------------|
| Site Position: | Northing: 671,119 300 ft | Latitude: 32° 50' 38 373 N |
| From: Map | Easting: 653,616 600 ft | Longitude: 103° 49' 59 356 W |
| Position Uncertainty: 0 00 ft | Slot Radius: " | Grid Convergence: 0 27 ° |

Well: Tex Mack 11 Fed #5

| | | | |
|-----------------------------|----------------------|---------------------------------|-------------------------------------|
| Well Position | +N/-S 0 00 ft | Northing: 671,119 300 ft | Latitude: 32° 50' 38 373 N |
| | +E/-W 0 00 ft | Easting: 653,616 600 ft | Longitude: 103° 49' 59 356 W |
| Position Uncertainty | 0 00 ft | Wellhead Elevation: ft | Ground Level: 3,948 00 ft |

Wellbore: OH

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|-----------|------------|-------------|--------------------|------------------|------------------------|
| | IGRF200510 | 11/6/2008 | 8 05 | 60 79 | 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 | 295 61 |

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 | |
| 1,950 00 | 0 00 | 0 00 | 1,950 00 | 0 00 | 0 00 | 0 00 | 0 00 | 0 00 | 0 00 | |
| 2,373 65 | 8 47 | 295 61 | 2,372 11 | 13 51 | -28 20 | 2 00 | 2 00 | 0 00 | 295 61 | |
| 4,891 92 | 8 47 | 295 61 | 4,862 89 | 173 89 | -362 80 | 0 00 | 0 00 | 0 00 | 0 00 | |
| 5,315 57 | 0 00 | 0 00 | 5,285 00 | 187 40 | -391 00 | 2 00 | -2 00 | 0 00 | 180 00 | PP-Tex Mack 11 Fed |
| 6,630 57 | 0 00 | 0 00 | 6,600 00 | 187 40 | -391 00 | 0 00 | 0 00 | 0 00 | 0 00 | PBHL-Tex Mack 11 F |

Scientific Drilling

Planning Report



Database: EDM 2003 16 Single User Db
 Company: COG Operating
 Project: Eddy County, NM (NAN27 NME)
 Site: Tex Mack 11 Fed #5
 Well: Tex Mack 11 Fed #5
 Wellbore: OH
 Design: Plan #1 - 7-7/8" Hole

Local Co-ordinate Reference: Well Tex Mack 11 Fed #5
 TVD Reference: Ground Elev @ 3948 00ft (Rig ?)
 MD Reference: Ground Elev @ 3948.00ft (Rig ?)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

Planned Survey

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------|
| 0 00 | 0 00 | 0 00 | 0 00 | 0 00 | 0 00 | 0 00 | 0 00 | 0 00 | 0 00 |
| 1,950 00 | 0 00 | 0 00 | 1,950 00 | 0 00 | 0 00 | 0 00 | 0 00 | 0 00 | 0 00 |
| KOP Start Build 2.00°/100' | | | | | | | | | |
| 2,000 00 | 1 00 | 295 61 | 2,000 00 | 0 19 | -0 39 | 0 44 | 2 00 | 2 00 | 0 00 |
| 2,100 00 | 3 00 | 295 61 | 2,099 93 | 1 70 | -3 54 | 3 93 | 2 00 | 2 00 | 0 00 |
| 2,200 00 | 5 00 | 295 61 | 2,199 68 | 4 71 | -9 83 | 10 90 | 2 00 | 2 00 | 0 00 |
| 2,300 00 | 7 00 | 295 61 | 2,299 13 | 9 23 | -19 26 | 21 35 | 2 00 | 2 00 | 0 00 |
| 2,373 65 | 8 47 | 295 61 | 2,372 11 | 13 51 | -28 20 | 31 27 | 2 00 | 2 00 | 0 00 |
| EOC hold 8.47° | | | | | | | | | |
| 2,400 00 | 8 47 | 295 61 | 2,398 17 | 15 19 | -31 70 | 35 15 | 0 00 | 0 00 | 0 00 |
| 2,500 00 | 8 47 | 295 61 | 2,497 08 | 21 56 | -44 99 | 49 88 | 0 00 | 0 00 | 0 00 |
| 2,600 00 | 8 47 | 295 61 | 2,595 99 | 27 93 | -58 27 | 64 62 | 0 00 | 0 00 | 0 00 |
| 2,700 00 | 8 47 | 295 61 | 2,694 90 | 34 30 | -71 56 | 79 35 | 0 00 | 0 00 | 0 00 |
| 2,800 00 | 8 47 | 295 61 | 2,793 80 | 40 67 | -84 85 | 94 09 | 0 00 | 0 00 | 0 00 |
| 2,900 00 | 8 47 | 295 61 | 2,892 71 | 47 03 | -98 13 | 108 82 | 0 00 | 0 00 | 0 00 |
| 3,000 00 | 8 47 | 295 61 | 2,991 62 | 53 40 | -111 42 | 123 56 | 0 00 | 0 00 | 0 00 |
| 3,100 00 | 8 47 | 295 61 | 3,090 53 | 59 77 | -124 71 | 138 29 | 0 00 | 0 00 | 0 00 |
| 3,200 00 | 8 47 | 295 61 | 3,189 44 | 66 14 | -138 00 | 153 03 | 0 00 | 0 00 | 0 00 |
| 3,300 00 | 8 47 | 295 61 | 3,288 35 | 72 51 | -151 28 | 167 76 | 0 00 | 0 00 | 0 00 |
| 3,400 00 | 8 47 | 295 61 | 3,387 26 | 78 88 | -164 57 | 182 50 | 0 00 | 0 00 | 0 00 |
| 3,500 00 | 8 47 | 295 61 | 3,486 16 | 85 24 | -177 86 | 197 23 | 0 00 | 0 00 | 0 00 |
| 3,600 00 | 8 47 | 295 61 | 3,585 07 | 91 61 | -191 14 | 211 96 | 0 00 | 0 00 | 0 00 |
| 3,700 00 | 8 47 | 295 61 | 3,683 98 | 97 98 | -204 43 | 226 70 | 0 00 | 0 00 | 0 00 |
| 3,800 00 | 8 47 | 295 61 | 3,782 89 | 104 35 | -217 72 | 241 43 | 0 00 | 0 00 | 0 00 |
| 3,900 00 | 8 47 | 295 61 | 3,881 80 | 110 72 | -231 01 | 256 17 | 0 00 | 0 00 | 0 00 |
| 4,000 00 | 8 47 | 295 61 | 3,980 71 | 117 09 | -244 29 | 270 90 | 0 00 | 0 00 | 0 00 |
| 4,100 00 | 8 47 | 295 61 | 4,079 61 | 123 45 | -257 58 | 285 64 | 0 00 | 0 00 | 0 00 |
| 4,200 00 | 8 47 | 295 61 | 4,178 52 | 129 82 | -270 87 | 300 37 | 0 00 | 0 00 | 0 00 |
| 4,300 00 | 8 47 | 295 61 | 4,277 43 | 136 19 | -284 15 | 315 11 | 0 00 | 0 00 | 0 00 |
| 4,400 00 | 8 47 | 295 61 | 4,376 34 | 142 56 | -297 44 | 329 84 | 0 00 | 0 00 | 0 00 |
| 4,500 00 | 8 47 | 295 61 | 4,475 25 | 148 93 | -310 73 | 344 57 | 0 00 | 0 00 | 0 00 |
| 4,600 00 | 8 47 | 295 61 | 4,574 16 | 155 30 | -324 02 | 359 31 | 0 00 | 0 00 | 0 00 |
| 4,700 00 | 8 47 | 295 61 | 4,673 07 | 161 66 | -337 30 | 374 04 | 0 00 | 0 00 | 0 00 |
| 4,800 00 | 8 47 | 295 61 | 4,771 97 | 168 03 | -350 59 | 388 78 | 0 00 | 0 00 | 0 00 |
| 4,891 92 | 8 47 | 295 61 | 4,862 89 | 173.89 | -362 80 | 402 32 | 0 00 | 0 00 | 0 00 |
| Start Drop 2.00°/100' | | | | | | | | | |
| 4,900 00 | 8 31 | 295 61 | 4,870 88 | 174 40 | -363 87 | 403 50 | 2 00 | -2 00 | 0 00 |
| 5,000 00 | 6 31 | 295 61 | 4,970 07 | 179 90 | -375 34 | 416 23 | 2 00 | -2 00 | 0 00 |
| 5,100 00 | 4 31 | 295 61 | 5,069 63 | 183 90 | -383 69 | 425 48 | 2 00 | -2 00 | 0 00 |
| 5,200 00 | 2 31 | 295 61 | 5,169 46 | 186 39 | -388 90 | 431 26 | 2 00 | -2 00 | 0 00 |
| 5,300 00 | 0 31 | 295 61 | 5,269 43 | 187 38 | -390 96 | 433 55 | 2 00 | -2 00 | 0 00 |
| 5,315 57 | 0 00 | 0 00 | 5,285 00 | 187 40 | -391 00 | 433 59 | 2 00 | -2 00 | 0 00 |
| EOC hold 0.00° - PP-Tex Mack 11 Fed #5 | | | | | | | | | |
| 6,630 57 | 0 00 | 0 00 | 6,600 00 | 187 40 | -391 00 | 433 59 | 0 00 | 0 00 | 0 00 |
| PBHL-Tex Mack 11 Fed #5 | | | | | | | | | |

Scientific Drilling

Planning Report



Database: EDM 2003 16 Single User Db
Company: COG Operating
Project: Eddy County, NM (NAN27 NME)
Site: Tex Mack 11 Fed #5
Well: Tex Mack 11 Fed #5
Wellbore: OH
Design: Plan #1 - 7-7/8" Hole

Local Co-ordinate Reference: Well Tex Mack 11 Fed #5
TVD Reference: Ground Elev @ 3948 00ft (Rig ?)
MD Reference: Ground Elev @ 3948 00ft (Rig ?)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Targets

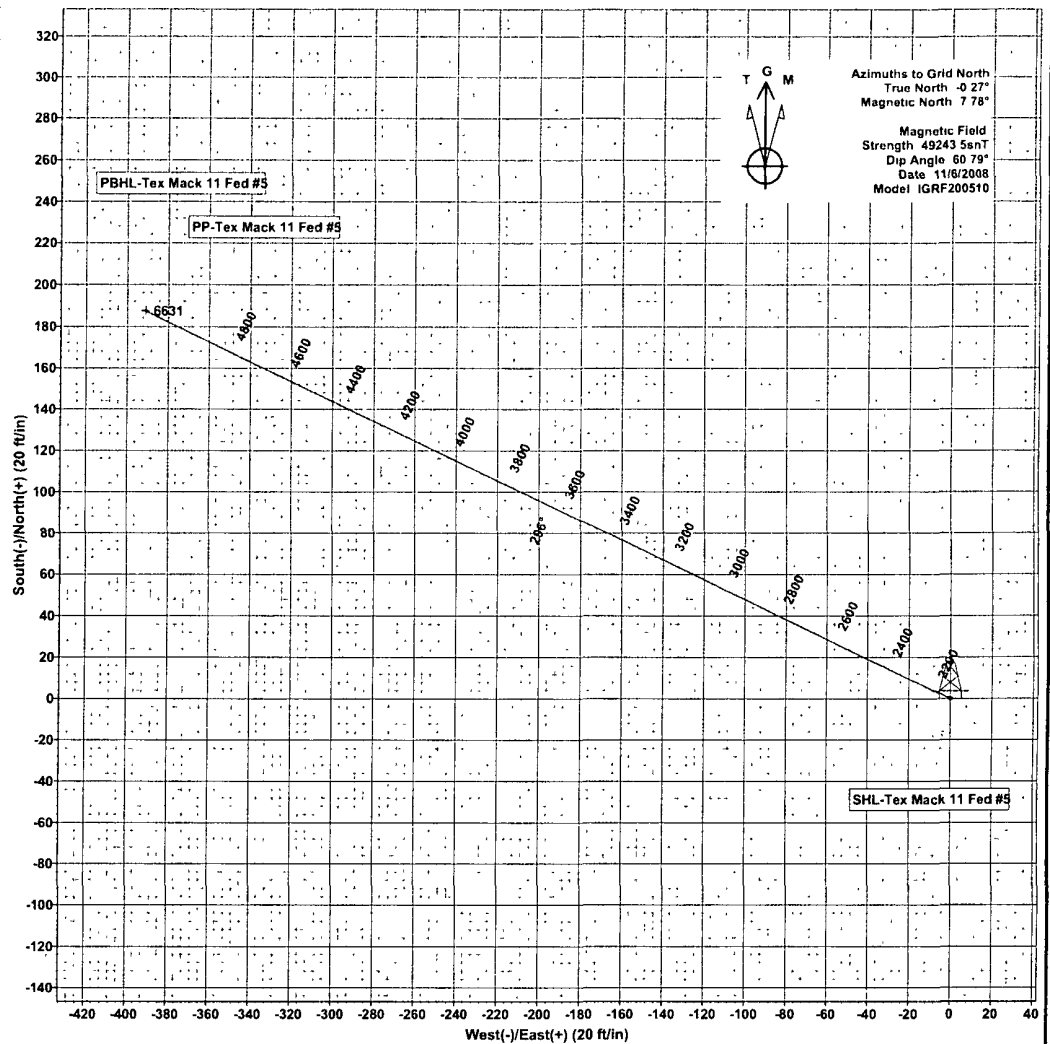
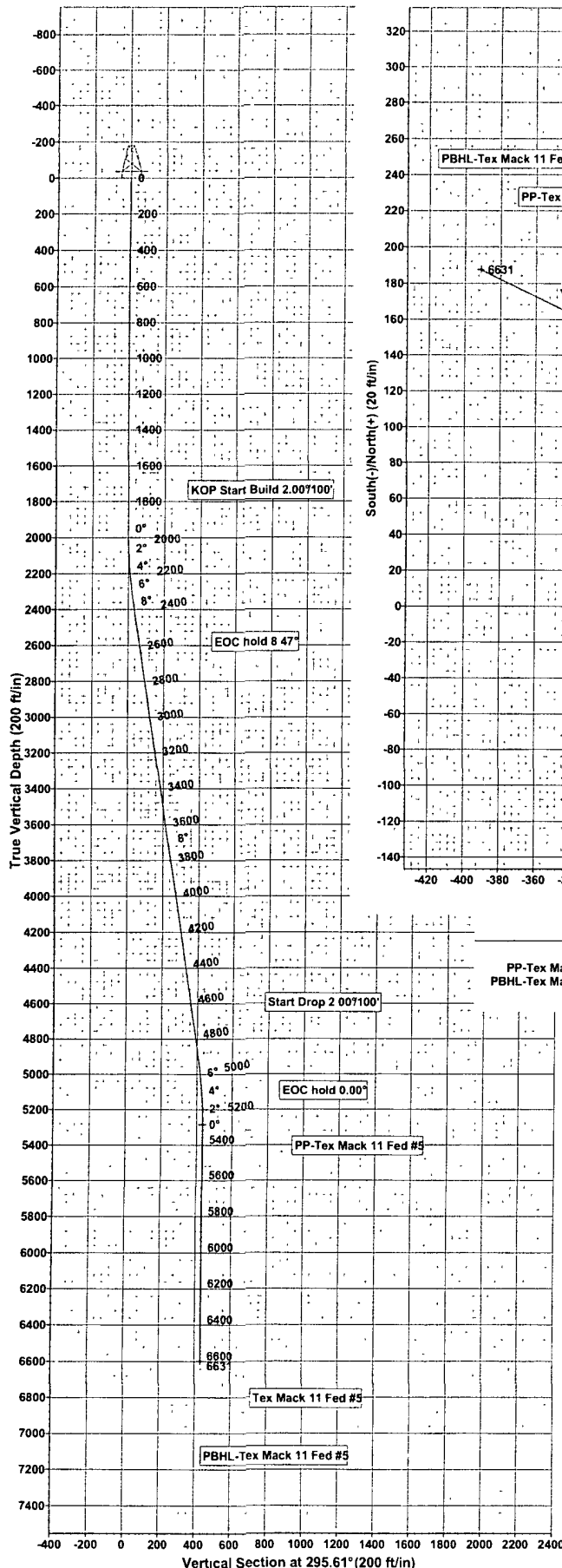
| Target Name | hit/miss target | Dip Angle | Dip Dir | TVD | +N/-S | +E/-W | Northing | Easting | Latitude | Longitude |
|-----------------------|-------------------------------|-----------|---------|----------|--------|---------|-------------|-------------|------------------|------------------|
| Shape | | (°) | (°) | (ft) | (ft) | (ft) | (ft) | (ft) | | |
| PP-Tex Mack 11 Fed #5 | - plan hits target - Point | 0 00 | 0 00 | 5,285 00 | 187 40 | -391 00 | 671,306 700 | 653,225 600 | 32° 50' 40 245 N | 103° 50' 3 928 W |
| PBHL-Tex Mack 11 Fed | - plan hits target - Point | 0 00 | 0 00 | 6,600 00 | 187 40 | -391 00 | 671,306 700 | 653,225 600 | 32° 50' 40 245 N | 103° 50' 3 928 W |

Plan Annotations

| Measured Depth | Vertical Depth | Local Coordinates | | Comment |
|----------------|----------------|-------------------|------------|----------------------------|
| (ft) | (ft) | +N/-S (ft) | +E/-W (ft) | |
| 1,950 00 | 1,950 00 | 0 00 | 0 00 | KOP Start Build 2 00°/100' |
| 2,373 65 | 2,372 11 | 13 51 | -28 20 | EOC hold 8 47° |
| 4,891 92 | 4,862 89 | 173 89 | -362 80 | Start Drop 2 00°/100' |
| 5,315 57 | 5,285 00 | 187 40 | -391 00 | EOC hold 0 00° |

COG Operating

Scientific Drilling for COG Operating
Site: Eddy County, NM (NAN27 NME)
Well: Tex Mack 11 Fed #5
Wellbore: OH
Design: Plan #1 - 7-7/8" Hole



WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

| Name | TVD | +N/-S | +E/-W | Northing | Easting | Latitude | Longitude | Shape |
|-------------------------|---------|--------|---------|------------|------------|-----------------|-----------------|-------|
| PP-Tex Mack 11 Fed #5 | 5285.00 | 187.40 | -391.00 | 671306.700 | 653225.600 | 32°50' 40.245 N | 103°50' 3.928 W | Point |
| PBHL-Tex Mack 11 Fed #5 | 6600.00 | 187.40 | -391.00 | 671306.700 | 653225.600 | 32°50' 40.245 N | 103°50' 3.928 W | Point |

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 7.78°
To convert a True Direction to a Grid Direction, Subtract 0.27°

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 | 1950.00 | 0.00 | 0.00 | 1950.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 3 | 2373.65 | 8.47 | 295.61 | 2372.11 | 13.51 | -28.20 | 2.00 | 295.61 | 31.27 | |
| 4 | 4891.92 | 8.47 | 295.61 | 4862.89 | 173.89 | -362.80 | 0.00 | 0.00 | 402.32 | |
| 5 | 5315.57 | 0.00 | 0.00 | 5285.00 | 187.40 | -391.00 | 2.00 | 180.00 | 433.59 | PP-Tex Mack 11 Fed #5 |
| 6 | 6630.57 | 0.00 | 0.00 | 6600.00 | 187.40 | -391.00 | 0.00 | 0.00 | 433.59 | PBHL-Tex Mack 11 Fed #5 |

WELL DETAILS. Tex Mack 11 Fed #5

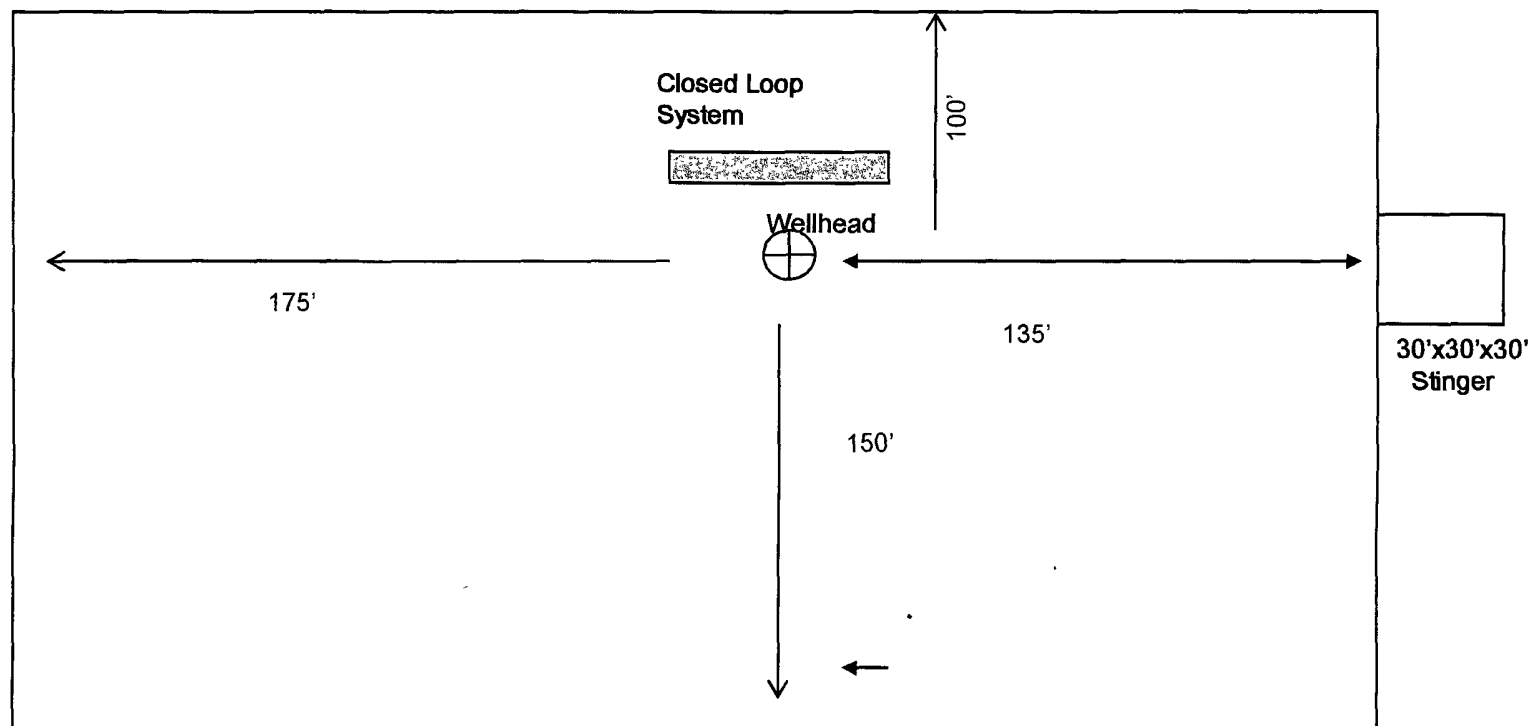
| +N/-S | +E/-W | Ground Level. | 3948.00 |
|-------|-------|---------------|------------------|
| 0.00 | 0.00 | Northing | 671119.300 |
| | | Easting | 653616.600 |
| | | Latitude | 32°50' 38.373 N |
| | | Longitude | 103°49' 59.356 W |

PROJECT DETAILS Eddy County, NM (NAN27 NME)

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

Plan Plan #1 - 7-7/8" Hole (Tex Mack 11 Fed #5/OH)

Created By: Julio Pina Date: 06-Nov-08
Checked: _____ Date: _____
Reviewed: _____ Date: _____
Approved: _____ Date: _____



Not To Scale

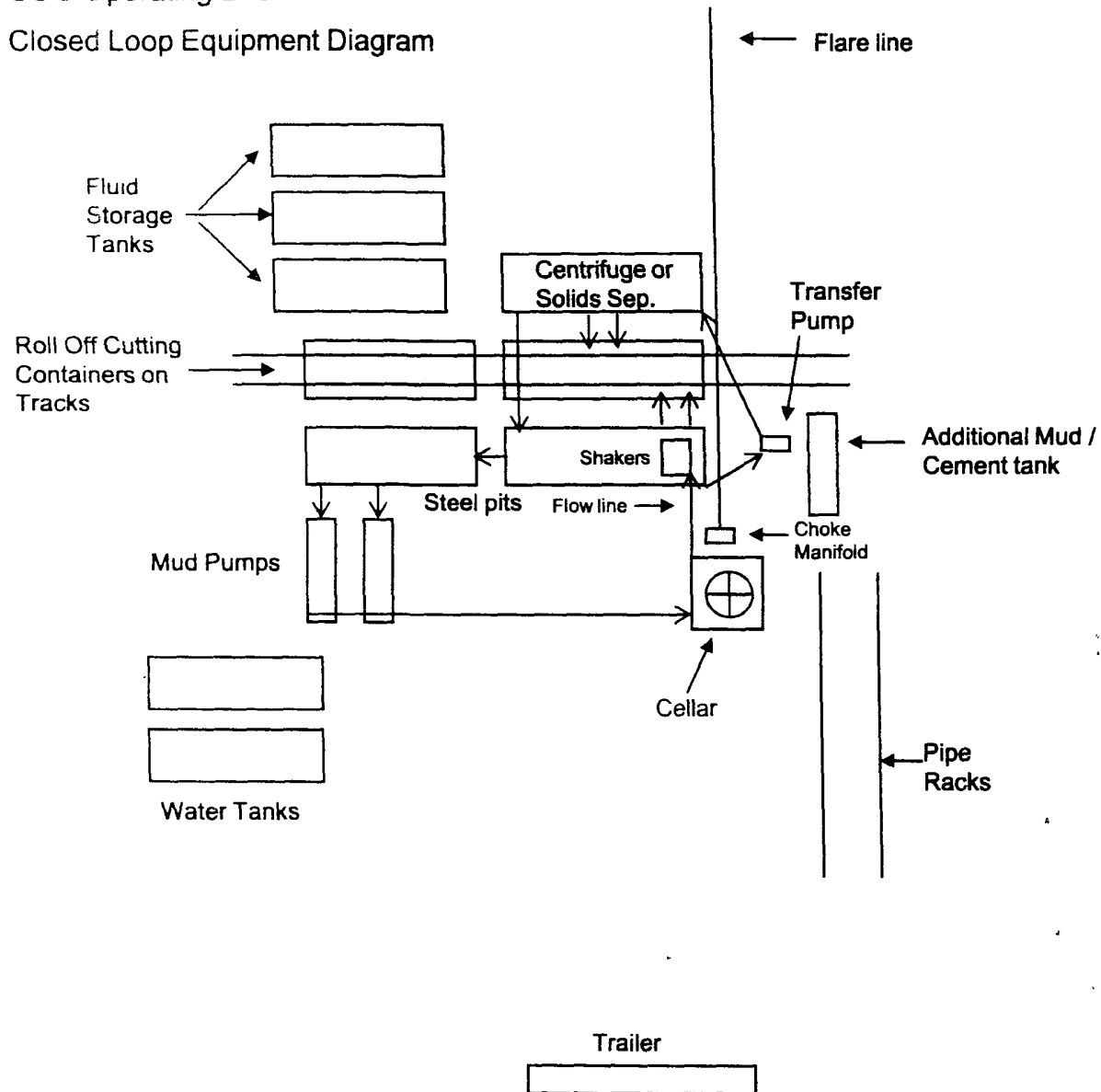
Exhibit 6

COG OPERATING, LLC

Rig Layout - Closed Loop System

COG Operating LLC

Closed Loop Equipment Diagram



Closed Loop Operation & Maintenance Procedure

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

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

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

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

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

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

Cuttings will be hauled to either:

CRI (permit number R9166)

or

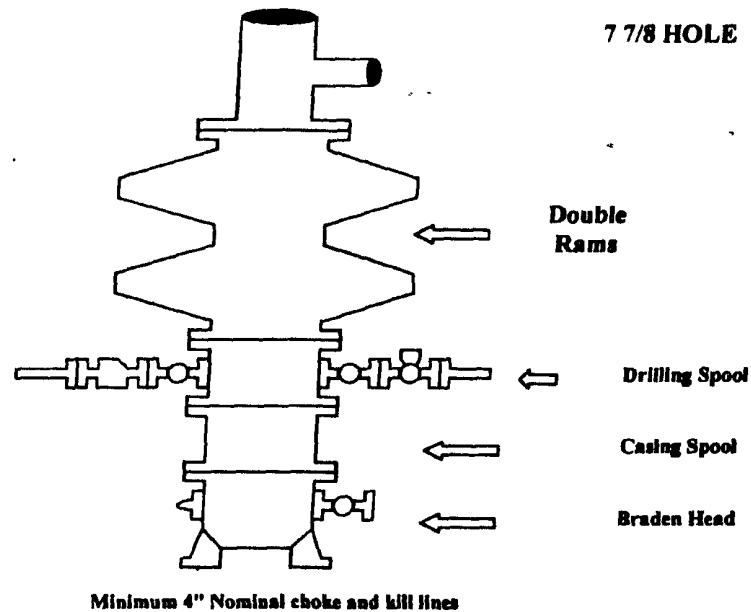
GMI (permit number 711-019-001)

dependent upon which rig is available to drill this well.

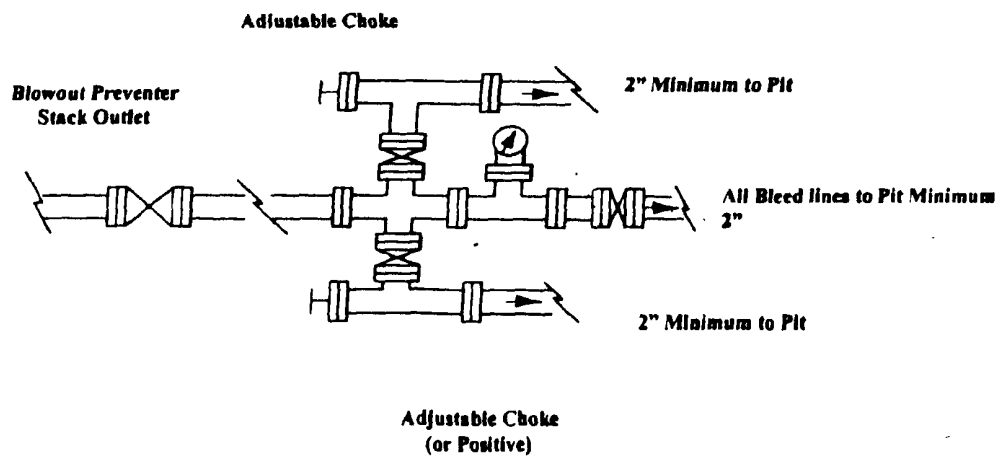
COG Operating LLC

Exhibit #9

BOPE and Choke Schematic



Choke Manifold Requirement (2000 psi WP)
No Annular Required



NOTES REGARDING THE BLOWOUT PREVENTERS

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

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

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

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

II. H2S SAFETY EQUIPMENT AND SYSTEMS

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

1. Well Control Equipment:

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

2. Protective equipment for essential personnel:

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

3. H2S detection and monitoring equipment:

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

4. Visual warning systems:

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

5. Mud program:

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

6. Metallurgy:

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

7. Communication:

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

8. Well testing:

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

EXHIBIT #7

WARNING
YOU ARE ENTERING AN H₂S
AUTHORIZED PERSONNEL ONLY

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

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

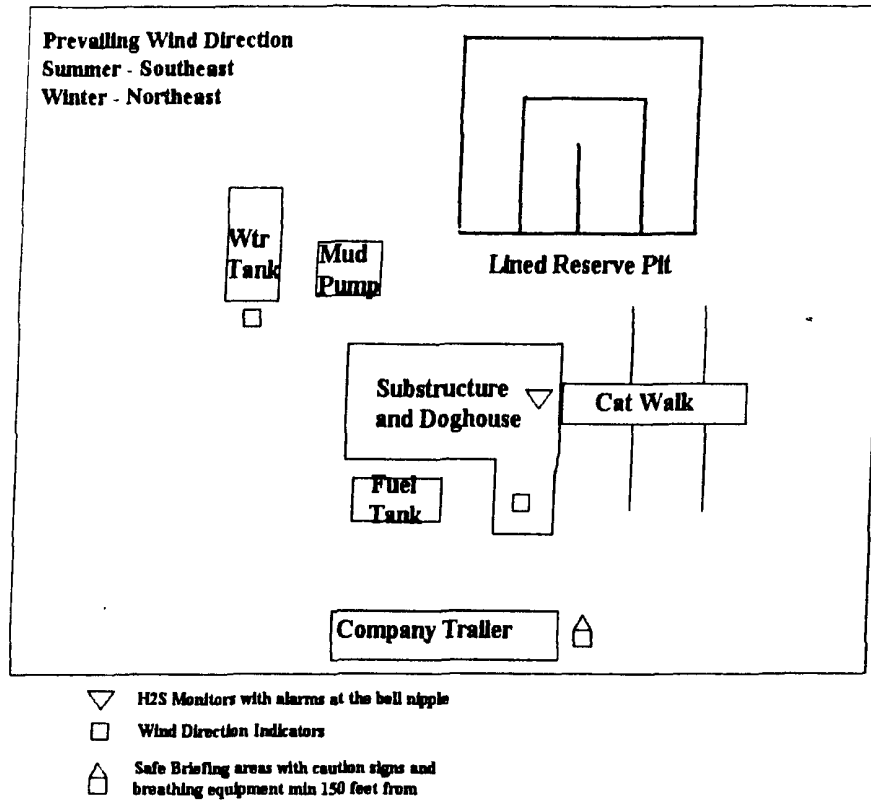
EDDY COUNTY EMERGENCY NUMBERS

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

LEA COUNTY EMERGENCY NUMBERS

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

DRILLING LOCATION H₂S SAFETY EQUIPMENT Exhibit # 8



SURFACE USE AND OPERATING PLAN

1. Existing & Proposed Access Roads

- A. The well site survey and elevation plat for the proposed well is shown in Exhibit #1. It was staked by John West Surveying, Hobbs, NM.
- B. All roads to the location are shown in the topographic map Exhibit #2. The existing lease roads are illustrated and are adequate for travel during drilling and production operations. Upgrading existing roads prior to drilling the well will be done where necessary
- C. Directions to location: From the intersection of Us Hwy. 82 and Co rd. #224 (ripple road) Go southwest on hwy. #82 approx. 1.2 miles to a lease rd. Turn right and go northwest approx. 0.35 miles: Turn right and go north approx. 0.3 miles. Veer right and go northeast approx. 0.5 miles. Veer left and go north approx. 0.9 miles. Turn left and go west approx. 0.3 miles to existing well pad. This location is approx. 150 feet north of well pad.
- D. Routine grading and maintenance of existing roads will be conducted as necessary to maintain their condition as long as any operations continue on this lease.

2. Proposed Access Road:

Exhibit #4 shows that the location, when constructed will be on the edge of the existing lease road. 0' of new access road will be constructed. .

- A. The maximum width of the running surface will be 14'. The road will be crowned, ditched and constructed of 6" rolled and compacted caliche. Ditches will be at 3:1 slope and 4 feet wide. Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage, and to be consistent with local drainage patterns.
- B. The average grade will be less than 1%.
- C. No turnouts are planned.
- D. No culverts, cattleguard, gates, low water crossings or fence cuts are necessary.
- E. Surfacing material will consist of native caliche. Caliche will be obtained from the nearest BLM approved caliche pit or reserve pit area.

3. Location of Existing Well:

Exhibit #5 shows all existing wells within a one-mile radius of this well. As shown on this plat there are numerous wells producing from the San Andres and Yeso formations.

4. Location of Existing and/or Proposed Facilities:

- A. COG Operating LLC does operate a production facility on this lease.
- B. If the well is productive, contemplated facilities will be as follows:
 - 1) Production will be sent to the Texmack 11 Federal tank battery located at the Texmack Federal 11 #3 well location. The facility location is shown in Exhibit #5.
 - 2) The tank battery and facilities including all flow lines and piping will be installed according to API specifications.
 - 3) Any additional caliche will be obtained from a BLM approved caliche pit. Any additional construction materials will be purchased from contractors.
 - 4) Proposed flow lines, will follow an archaeologically approved route to the Texmack 11 Federal Tank Battery located at the Texmack Fed. 11 #3 well location. The flowline will be SDR 7 3" poly line laid on the surface and will be approximately 1 mile' in length.
 - 5) It will be necessary to run electric power if this well is productive. Power will be provided by Lea County Electric and they will submit a separate plan and ROW for service to the well location.
 - 6) If the well is productive, rehabilitation plans will include the following:
 - a) The original topsoil from the well site will be returned to the location. And the site will be re-contoured to as close to possible to the original site.

5. Location and Type of Water Supply:

The well will be drilled with combination brine and fresh water mud system as outlined in the drilling program. The water will be obtained from commercial water stations in the area and hauled to location by transport truck over the existing and proposed access roads shown in Exhibit #2. If a commercial fresh water source is nearby, fast line may be laid along

existing road ROW's and fresh water pumped to the well. No water well will be drilled on the location.

6. Source of Construction Materials:

All caliche required for construction of the drill pad and proposed new access road (approximately 2500 cubic yards) will be obtained from a BLM approved caliche pit .

7. Methods of Handling Water Disposal:

Methods of Handling Water Disposal:

- A. The well will be drilled utilizing a closed loop mud system. Drill cuttings will be held in roll-off style mud boxes and taken to an NMOCD approved disposal site.
- B. Drilling fluids will be contained in steel mud pits.
- C. Water produced from the well during completion will be held temporally in steel tanks and then taken to an NMOCD approved commercial disposal facility.
- D. Garbage and trash produced during drilling or completion operations will be collected in a trash bin and hauled to an approved landfill. No toxic waste or hazardous chemicals will be produced by this operation.
- E. After the rig is moved out and the well is either completed or abandoned, all waste materials will be cleaned up within 30 days. In the event of a dry hole, only a dry hole marker will remain.

8. Ancillary Facilities:

No airstrip, campsite or other facilities will be built as a result of the operation on this well.

9. Well Site Layout:

- A. The drill pad layout, with elevations staked by Asel Surveying, is shown in Exhibit #4. Dimensions of the pad and pits are shown on Exhibit #6. Topsoil, if available, will be stockpiled per BLM specifications. Because the pad is almost level no major cuts will be required.
- B. Exhibit #6 also shows the proposed orientation of reserve pit, working pit and access road. No permanent living facilities are planned, but a temporary foreman/toolpusher's trailer will be on location during the drilling operations.

10. Plans for Restoration of the Surface:

- A. Upon completion of the drilling and/or completion operations, if the well is found to be non-commercial, the caliche will be removed from the pad and transported to the original caliche pit or used for other drilling locations in the area. The road will be reclaimed as directed by the BLM. The original top soil will again be returned to the pad and contoured, as close as possible, to the original topography.
- B. The location and road will be rehabilitated as recommended by the BLM.
- C. Upon completion of proposed operations, if the well is completed, the reserve pit area will be closed as outlined in Section 4.6 above within the same prescribed time. Any additional caliche required for facilities will be obtained from a BLM approved caliche pit. Topsoil removed from the drill site will be used to re-contour the pit area to its original natural level and reseeded as per BLM specifications.

11. Surface Ownership:

- A. The surface is owned by the U.S. Government and is administered by the Bureau of Land Management. The surface is multiple uses with the primary uses of the region for grazing of livestock and the production of oil and gas.
- B. The surface tenant for this site is Olane Caswell, 1702 Gillham, Brownfield TX.
- C. The proposed road routes and surface location will be restored as directed by the BLM.

12. Other Information:

- A. The area around the well site is grassland and the topsoil is sandy. The vegetation is moderately sparse with native prairie grasses, some mesquite and shinnery oak. No wildlife was observed but it is likely that mule deer, rabbits, coyotes and rodents traverse the area.
- B. There is no permanent or live water in the immediate area.
- C. There are no dwellings within 2 miles of this location.
- D. A Cultural Resources Examination is being prepared by Southern New Mexico Archaeological Services, Inc. P.O. Box 1, Bent New Mexico, 88314, phone # 505-671-4797 and the results will be forwarded to your office in the near future.

13. Bond Coverage:

Bond Coverage is Nationwide Bond # 000215

14. Lessee's and Operator's Representative:

The COG Operating LLC representative responsible for assuring compliance with the surface use plan is as follows:

John Coffman,
Drilling Superintendent
COG Operating LLC
550 W. Texas, Suite 1300
Midland, TX 79701
Phone (432) 683-7443 (office)
(432) 631-9762 (cell)

Erick Nelson.
Division Operations Manager
COG Operating LLC
550 W. Texas, Suite 1300
Midland, TX 79701
Phone (505) 746-2210 (office)
(432) 238-7591 (cell)

I hereby certify that I, or persons under my direct supervision, have inspected the drill site and access road proposed herein; that I am familiar with the conditions that presently exist; that I have full knowledge of State and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or COG Operating, LLC, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements. Executed this 10th day of November, 2008.

Signed: _____



Printed Name: John Coffman

Position: Drilling Superintendent

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

Telephone: (432) 683-7443

Field Representative (if not above signatory): Same

Address (if different from above):

Telephone (if different from above):

E-mail: JCoffman@conchoresources.com

Exhibits:

- | | |
|--------------------|---|
| Exhibit #1 | Wellsite and Elevation Plat Form C-102 Well location and acreage dedication plat |
| Exhibit #2 | Topographic Map (West) |
| Exhibit #3 | Vicinity Map and area roads |
| Exhibit #4 | Elevation Plat (West) |
| Exhibit #5 | Topographic extract showing wells, roads and flowlines |
| Exhibit #6 | Pad Layout and orientation |
| Exhibit #7 | H2S Signage |
| Exhibit #8 | H2S Equipment location |
| Exhibit #9 | BOP and Choke diagrams |
| Exhibit #10 | BOP Requirements |
| Exhibit #11 | Minimum Choke Manifold Requirements |
| Exhibit #12 | Form C-144 NMOCD pit permit application |

PECOS DISTRICT CONDITIONS OF APPROVAL

| | |
|-----------------------|-------------------------------------|
| OPERATOR'S NAME: | COG Operating LLC |
| LEASE NO.: | LC-029418b |
| WELL NAME & NO.: | Tex Mack 11 Fed #5 |
| SURFACE HOLE FOOTAGE: | 800' FSL & 600' FEL |
| BOTTOM HOLE FOOTAGE: | 990' FSL & 990' FEL |
| LOCATION: | Section 11, T. 17 S., R 31 E., NMPM |
| COUNTY: | Eddy County, New Mexico |

TABLE OF CONTENTS

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

- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☒ **Special Requirements**
 - Lesser Prairie Chicken
- ☒ **Construction**
 - V-Door**
 - Notification
 - Topsoil
 - Reserve Pit
 - Federal Mineral Material Pits
 - Well Pads
 - Roads
- ☐ **Road Section Diagram**
- ☒ **Drilling**
- ☒ **Production (Post Drilling)**
 - Well Structures & Facilities
 - Pipelines
- ☐ **Interim Reclamation**
- ☐ **Final Abandonment/Reclamation**

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)

LESSER PRAIRIE-CHICKENS

No surface use is allowed during the following time periods; unless otherwise specified, this stipulation does not apply to operation and maintenance of production facilities.

For the purpose of Protecting Lesser Prairie-Chickens:

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.

VI. CONSTRUCTION

V-DOOR NORTH

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 to be stripped is approximately 8 inches in depth. The topsoil shall not be used to backfill the reserve pit and will be used for interim and final reclamation.

C. RESERVE PITS

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

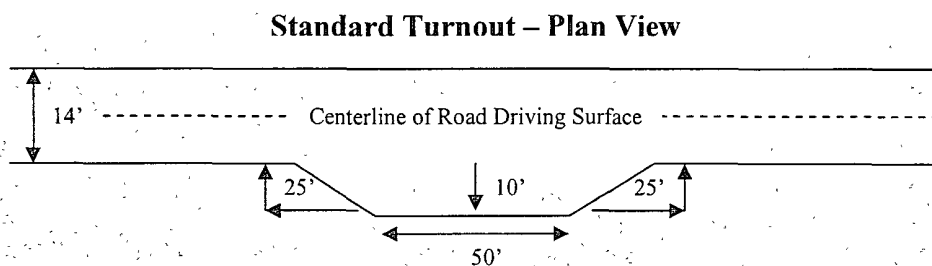
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching

Ditching shall be required on both sides of the road.

Turnouts

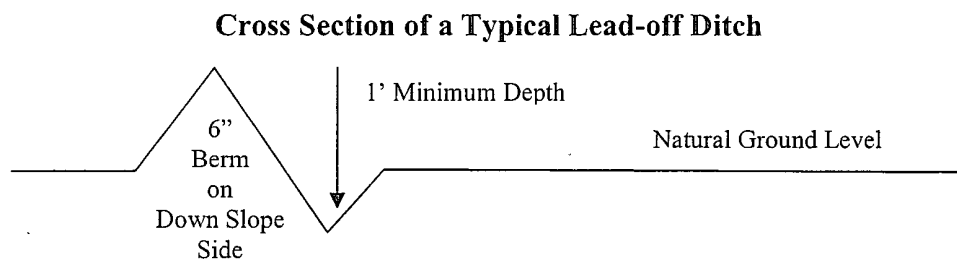
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:



Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outslowing 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.



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:

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

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

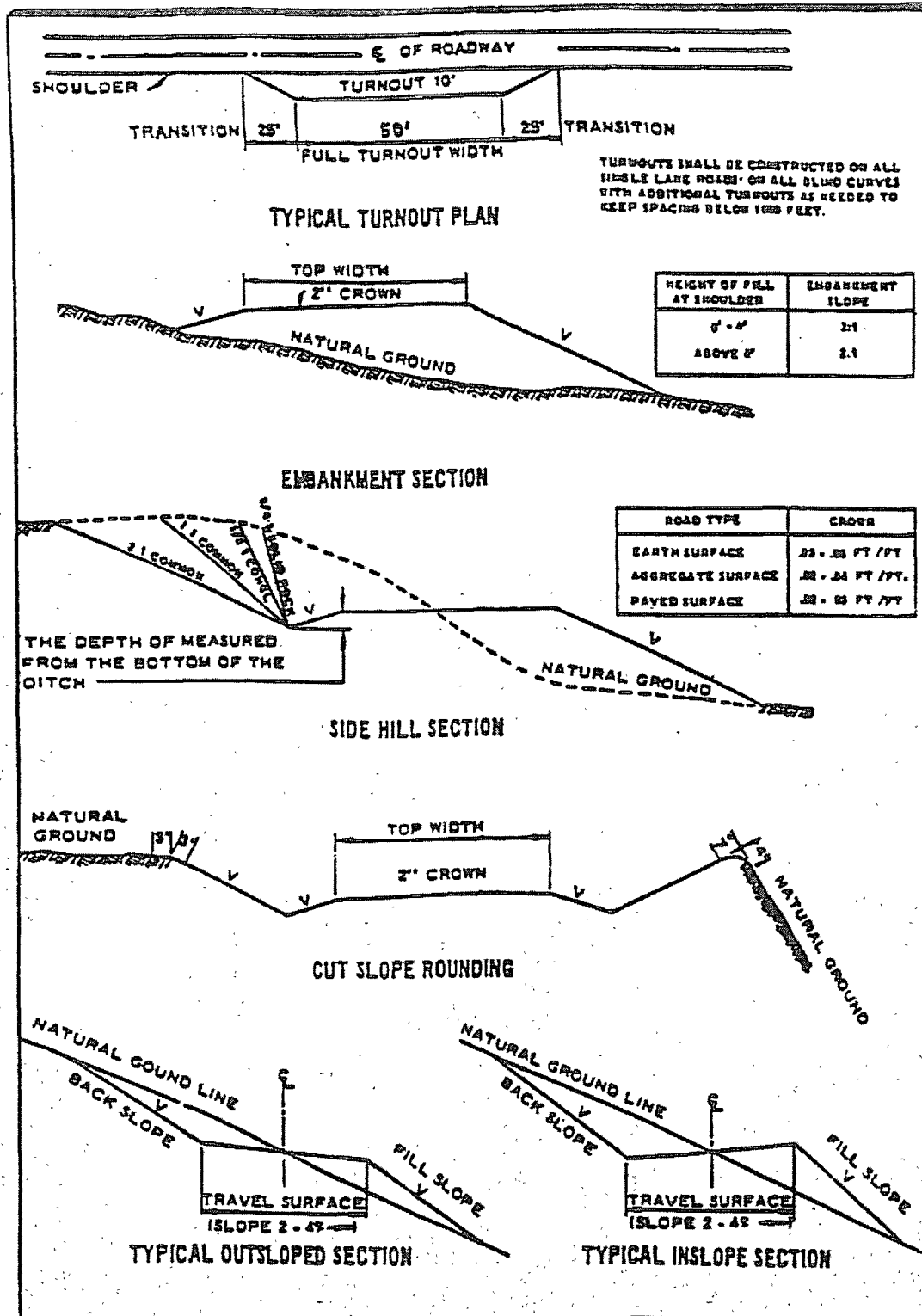
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

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

☒ **Eddy County**

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,
(575) 361-2822

1. A Hydrogen Sulfide (H₂S) Drilling Plan should be activated 500 feet prior to drilling into the **Queen** formation. **If Hydrogen Sulfide is encountered, please report measured amounts 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 high pressure air pockets in the Rustler and Salado.

Possible water flows in the Salado and Artesia Groups.

Possible lost circulation in the Grayburg and San Andres formations.

1. The 13-3/8 inch surface casing shall be set **at approximately 650 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt)** and cemented to the surface. **Fresh water mud to be used to setting depth.**
 - 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 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 primary cement job is to include the lead cement slurry. Not applicable if proposed program used.**
 - c. 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.
 - d. 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-d above. **Casing to be set in the Tansill formation below the base of the salt 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. **Effective November 1, 2008, no variances will be granted on reduced pressure tests on the surface casing and BOP/BOPE. Onshore Order 2 requirements will be in effect.**

D. DRILL STEM TEST

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

WWI 121108

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

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 or dune areas, the pipeline will be "snaked" around hummocks and dunes rather than 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.

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.

Seed Mixture for LPC Sand/Shinnery 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 seed 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:

| <u>Species</u> | <u>lb/acre</u> |
|---------------------|----------------|
| Plains Bristlegrass | 5lbs/A |
| Sand Bluestem | 5lbs/A |
| Little Bluestem | 3lbs/A |
| Big Bluestem | 6lbs/A |
| Plains Coreopsis | 2lbs/A |
| Sand Dropseed | 1lbs/A |

**Four-winged Saltbush 5lbs/A

* This can be used around well pads and other areas where caliche cannot be removed.

*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.