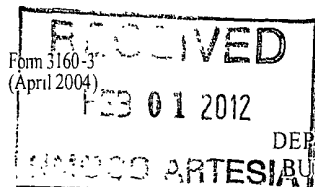


OCD-ARTESIA



Form 3160-3  
(April 2004)

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

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

|                                                                                                                                                                                                           |                                                    |                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|-----------------------------------------------------------------------------|
| 1a Type of work <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER                                                                                                                |                                                    | 5 Lease Serial No<br>NMLC-028731A                                           |
| 1b Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone |                                                    | 6 If Indian, Allottee or Tribe Name<br>N/A                                  |
| 2 Name of Operator<br>COG Operating LLC                                                                                                                                                                   |                                                    | 7 If Unit or CA Agreement, Name and No<br>NMNM-111789X; Dodd Federal Unit   |
| 3a Address<br>550 W. Texas Ave., Suite 1300<br>Midland, TX 79701                                                                                                                                          | 3b Phone No. (include area code)<br>432-685-4384   | 8 Lease Name and Well No.<br>DODD FEDERAL UNIT #667 [308155]                |
| 4 Location of Well (Report location clearly and in accordance with any State requirements *)<br>At surface SHL: 2128' FSL & 1360' FEL, Unit J<br>At proposed prod zone BHL: 1980' FSL & 990' FEL, Unit I  |                                                    | 9 API Well No.<br>30-015- 39903                                             |
| 14 Distance in miles and direction from nearest town or post office*<br>2 miles from Loco Hills, NM                                                                                                       |                                                    | 10 Field and Pool, or Exploratory<br>Grayburg Jackson; SR-Q-Grbg-SA [28509] |
| 15 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig. unit line, if any)<br>1360'                                                                              | 16 No. of acres in lease<br>600                    | 11 Sec. T. R. M. or Blk and Survey or Area<br>Sec 15 T17S R29E              |
| 18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.<br>184'                                                                                         | 19 Proposed Depth<br>TVD: 4550' MD: 4574'          | 12 County or Parish<br>EDDY                                                 |
| 21 Elevations (Show whether DF, KDB, RT, GL, etc)<br>3599' GL                                                                                                                                             | 22 Approximate date work will start*<br>12/31/2011 | 13 State<br>NM                                                              |
| 17 Spacing Unit dedicated to this well<br>40                                                                                                                                                              |                                                    |                                                                             |
| 20 BLM/BIA Bond No. on file<br>NMB000215; NMB000740                                                                                                                                                       |                                                    |                                                                             |
| 23 Estimated duration<br>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<br> | Name (Printed/Typed)<br>Kelly J. Holly | Date<br>10/12/2011 |
|------------------|----------------------------------------|--------------------|

Title  
Permitting Tech

|                                             |                                     |                     |
|---------------------------------------------|-------------------------------------|---------------------|
| Approved by (Signature)<br>/s/ Don Peterson | Name (Printed/Typed)<br>[Signature] | Date<br>JAN 30 2012 |
|---------------------------------------------|-------------------------------------|---------------------|

|                        |                                 |
|------------------------|---------------------------------|
| Title<br>FIELD MANAGER | Office<br>CARLSBAD FIELD OFFICE |
|------------------------|---------------------------------|

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Conditions of approval, if any, are attached

APPROVAL FOR TWO YEARS

Title 18 USC Section 1001 and Title 43 USC Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction

\*(Instructions on page 2)

Roswell Controlled Water Basin

SEE ATTACHED FOR  
CONDITIONS OF APPROVAL

Approval Subject to General Requirements  
& Special Stipulations Attached

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  
11885 S. ST. FRANCIS DR., SANTA FE, NM 87505

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

Form C-102  
Revised July 16, 2010  
Submit to Appropriate  
District Office

☐ AMENDED REPORT

**WELL LOCATION AND ACREAGE DEDICATION PLAT**

|                                     |                                            |                                                 |
|-------------------------------------|--------------------------------------------|-------------------------------------------------|
| API Number<br><b>30-015 - 39903</b> | Pool Code<br><b>28509</b>                  | Pool Name<br><b>Grayburg Jackson; SR-Q-G-SA</b> |
| Property Code<br><b>308195</b>      | Property Name<br><b>DODD FEDERAL UNIT</b>  | Well Number<br><b>667</b>                       |
| OGRID No.<br><b>229137</b>          | Operator Name<br><b>COG OPERATING, LLC</b> | Elevation<br><b>3599'</b>                       |

Surface Location

| UL or lot No. | Section   | Township    | Range       | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County      |
|---------------|-----------|-------------|-------------|---------|---------------|------------------|---------------|----------------|-------------|
| <b>J</b>      | <b>15</b> | <b>17-S</b> | <b>29-E</b> |         | <b>2128</b>   | <b>SOUTH</b>     | <b>1360</b>   | <b>EAST</b>    | <b>EDDY</b> |

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      |
|------------------------------|-----------------|--------------------|-------------|---------|---------------|------------------|---------------|----------------|-------------|
| <b>I</b>                     | <b>15</b>       | <b>17-S</b>        | <b>29-E</b> |         | <b>1980</b>   | <b>SOUTH</b>     | <b>990</b>    | <b>EAST</b>    | <b>EDDY</b> |
| Dedicated Acres<br><b>40</b> | 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>SECTION, QUARTER &amp; SIXTEENTH CORNER COORDINATES</p> <p>Ⓐ - Y=667390.2, X=583293.1</p> <p>Ⓑ - Y=666074.0, X=583295.7</p> <p>Ⓒ - Y=667404.9, X=585938.7</p> <p>Ⓓ - Y=666082.7, X=585942.0</p> | <p>GEODETIC COORDINATES<br/>NAD 27 NME</p> <p>SURFACE LOCATION<br/>Y=666886.6 N<br/>X=584580.2 E</p> <p>LAT.=32.833055° N<br/>LONG.=104.057971° W</p> <p>BOTTOM HOLE LOCATION<br/>Y=666738.9 N<br/>X=584950.6 E</p> <p>Penetration Point<br/>1980 FSL +<br/>990 FEL</p> | <p>3605.8' 3598.3'</p> <p>600'</p> <p>3599.9' 3593.9'</p> <p>DETAIL</p> <p>GRID AZ. -111°43'43"<br/>HORZ. DIST. -398.9'</p> <p>1360'</p> <p>990'</p> <p>2128'</p> <p>1980'</p> | <p><b>OPERATOR CERTIFICATION</b></p> <p>I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p><i>Kelly J. Holly</i> 10-3-11<br/>Signature Date</p> <p>Kelly J. Holly<br/>Printed Name</p> <p>kholly@concho.com<br/>E-mail Address</p> <p><b>SURVEYOR CERTIFICATION</b></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>SEPTEMBER 7, 2011</p> <p>Date of Survey</p> <p>Signature &amp; Seal of Professional Surveyor:</p> <p><i>Ronald J. Eidson</i></p> <p>Certificate Number... Gary G. Eidson 12641<br/>Ronald J. Eidson 3239</p> <p>LA JWSC W.O.: 11 11 1329</p> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## MASTER DRILLING PROGRAM

### 1. Geologic Name of Surface Formation

Quaternary

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

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

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

|            |       |             |
|------------|-------|-------------|
| Water Sand | 150'  | Fresh Water |
| Grayburg   | 2220' | Oil/Gas     |
| San Andres | 2540' | Oil/Gas     |
| Glorieta   | 4000' | Oil/Gas     |
| Paddock    | 4075' | Oil/Gas     |
| Blinebry   | 4620' | Oil/Gas     |
| Tubb       | 5520' | Oil/Gas     |

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

#### 4. Casing Program

See  
COA

| Hole Size | Interval   | OD<br>Casing | Weight    | Grade      | Jt., Condition | Jt.  | brst/clps/ten   |
|-----------|------------|--------------|-----------|------------|----------------|------|-----------------|
| 17 1/2"   | 0-300' 255 | 13 3/8"      | 48#       | H-40orJ-55 | ST&C/New       | ST&C | 9.22/3.943/15.8 |
| 11"       | 0-850' 900 | 8 5/8"       | 24or32#   | J-55       | ST&C/New       | ST&C | 3.03/2.029/7.82 |
| 7 7/8"    | 0-TD       | 5 1/2"       | 15.5or17# | J-55orL-80 | LT&C/New       | LT&C | 1.88/1.731/2.42 |

#### 5. Cement Program See COA

13 3/8" Surface Casing:

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

8 5/8" Intermediate Casing:

##### 11" Hole:

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

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

5 1/2" Production Casing:

**Single Stage:** LEAD 500 sx 35:65:6 C:Poz:Gel w/ 5% Salt + 5 pps LCM + 0.2% SMS + 0.3% FL-52A + 0.125 pps CF, yield-2.05; + TAIL 400 sx 50:50:2 C:Poz:Gel w/ 5% Salt + 3 pps LCM + 0.6% SMS + 1% FL-25 + 1% BA-58 + 0.3% FL-52A + 0.125 pps CF, yield-1.37, to 200' minimum tie back to intermediate casing. 76.8% open hole excess, cement calculated back to surface.

**Multi-Stage:** Stage 1: (Assumed TD of 4550') 500 sx 50:50:2 C:Poz:Gel w/ 5% Salt + 3 pps LCM + 0.6% SMS + 1% FL-25 + 1% BA-58 + 0.3% FL-52A + 0.125 pps CF,

yield - 1.37, 34% excess; Stage 2: LEAD 450 sx 50:50:2 C:Poz:Gel w/ 5% Salt + 3 pps LCM + 0.6% SMS + 1% FL-25 + 1% BA-58 + 0.3% FL-52A + 0.125 pps CF, yield - 1.37, + TAIL 250 sx Class C w/ 0.3% R-3 + 1.5% CD-32, yield - 1.02 148% open hole excess, cement calculated back to surface. Multi stage tool to be set at approximately, depending on hole conditions, 2500'. Cement volumes will be adjusted proportionately for depth changes of multi stage tool, assumption for tool is water flow.

## 6. Minimum Specifications for Pressure Control

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

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

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

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

| DEPTH               | TYPE        | WEIGHT  | VISCOSITY | WATERLOSS |
|---------------------|-------------|---------|-----------|-----------|
| 0-300' <i>255</i>   | Fresh Water | 8.5     | 28        | N.C.      |
| 300-850' <i>900</i> | Brine       | 10      | 30        | N.C.      |
| 850'-TD'            | Cut Brine   | 8.7-9.2 | 30        | N.C.      |

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

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

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

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

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

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

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

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

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



## **COG Operating LLC**

Eddy County, NM (NAN27 NME)

Dodd Federal Unit #667

Dodd Federal Unit #667

OH

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

SHL = 2128' FSL & 1360' FEL

BHL = 1980' FSL & 990' FWL

Top of Paddock = 123' South of Surface & 307' East of Surface @ 4000' TVD

## **Standard Planning Report**

10 October, 2011



**Scientific Drilling**  
Directional Drilling Operations





# Scientific Drilling Planning Report



Database: EDM-Julio  
Company: COG Operating LLC  
Project: Eddy County, NM (NAN27 NME)  
Site: Dodd Federal Unit #667  
Well: Dodd Federal Unit #667  
Wellbore: OH  
Design: Plan #1 7-7/8" Hole

Local Co-ordinate Reference:  
TVD Reference:  
MD Reference:  
North Reference:  
Survey Calculation Method:  
Site Dodd Federal Unit #667  
GL Elev @ 3599 00usft  
GL Elev @ 3599 00usft  
Grid  
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: Dodd Federal Unit #667  
Site Position: Northing: 666,886 60 usft Latitude: 32° 49' 58 997 N  
From: Map Easting: 584,580 20 usft Longitude: 104° 3' 28 696 W  
Position Uncertainty: 0 00 usft Slot Radius: 13-3/16 " Grid Convergence: 0 15 °

Well: Dodd Federal Unit #667  
Well Position: +N/-S 0 00 usft Northing: 666,886 60 usft Latitude: 32° 49' 58 997 N  
+E/-W 0 00 usft Easting: 584,580 20 usft Longitude: 104° 3' 28 696 W  
Position Uncertainty: 0 00 usft Wellhead Elevation: Ground Level: 3,599 00 usft

Wellbore: OH  
Magnetics: Model Name Sample Date Declination Dip Angle Field Strength  
(°) (°) (nT)  
IGRF2010 2011/10/10 7 82 60 66 48,896

Design: Plan #1 7-7/8" Hole  
Audit Notes:  
Version: Phase: PLAN Tie On Depth: 0 00  
Vertical Section: Depth From (TVD) +N/-S +E/-W Direction  
(usft) (usft) (°)  
0.00 0 00 0 00 111 74

Plan Sections

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) | TFO (°) | Target         |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|------------------------|-----------------------|---------|----------------|
| 0 00                  | 0 00            | 0 00        | 0 00                  | 0 00         | 0 00         | 0 00                    | 0 00                   | 0 00                  | 0 00    |                |
| 1,150 00              | 0 00            | 0 00        | 1,150 00              | 0 00         | 0 00         | 0 00                    | 0 00                   | 0 00                  | 0 00    |                |
| 1,502 60              | 7 05            | 111 74      | 1,501 71              | -8 03        | 20 13        | 2 00                    | 2 00                   | 31 69                 | 111 74  |                |
| 4,574 13              | 7 05            | 111 74      | 4,550 00              | -147 70      | 370 40       | 0 00                    | 0 00                   | 0 00                  | 0 00    | PBHL-Dodd #667 |



Scientific Drilling  
Planning Report



Database: EDM-Julio  
Company: COG Operating LLC  
Project: Eddy County, NM (NAN27 NME)  
Site: Dodd Federal Unit #667  
Well: Dodd Federal Unit #667  
Wellbore: OH  
Design: Plan #1 7-7/8" Hole

Local Co-ordinate Reference:  
TVD Reference:  
MD Reference:  
North Reference:  
Survey Calculation Method:  
Site Dodd Federal Unit #667  
GL Elev @ 3599.00usft  
GL Elev @ 3599.00usft  
Grid  
Minimum Curvature

| Planned Survey           |                 |             |                       |              |              |                         |                         |                        |                       |
|--------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| Measured Depth (usft)    | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
| 0.00                     | 0.00            | 0.00        | 0.00                  | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 1,050.00                 | 0.00            | 0.00        | 1,050.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 8-5/8" Casing            |                 |             |                       |              |              |                         |                         |                        |                       |
| 1,150.00                 | 0.00            | 0.00        | 1,150.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| KOP Start DLS 2.00°/100' |                 |             |                       |              |              |                         |                         |                        |                       |
| 1,200.00                 | 1.00            | 111.74      | 1,200.00              | -0.16        | 0.41         | 0.44                    | 2.00                    | 2.00                   | 0.00                  |
| 1,300.00                 | 3.00            | 111.74      | 1,299.93              | -1.45        | 3.65         | 3.93                    | 2.00                    | 2.00                   | 0.00                  |
| 1,400.00                 | 5.00            | 111.74      | 1,399.68              | -4.04        | 10.13        | 10.90                   | 2.00                    | 2.00                   | 0.00                  |
| 1,500.00                 | 7.00            | 111.74      | 1,499.13              | -7.91        | 19.83        | 21.35                   | 2.00                    | 2.00                   | 0.00                  |
| 1,502.60                 | 7.05            | 111.74      | 1,501.71              | -8.03        | 20.13        | 21.67                   | 2.00                    | 2.00                   | 0.00                  |
| EOC hold 7.05°           |                 |             |                       |              |              |                         |                         |                        |                       |
| 1,600.00                 | 7.05            | 111.74      | 1,598.37              | -12.46       | 31.24        | 33.63                   | 0.00                    | 0.00                   | 0.00                  |
| 1,700.00                 | 7.05            | 111.74      | 1,697.62              | -17.00       | 42.64        | 45.91                   | 0.00                    | 0.00                   | 0.00                  |
| 1,800.00                 | 7.05            | 111.74      | 1,796.86              | -21.55       | 54.05        | 58.18                   | 0.00                    | 0.00                   | 0.00                  |
| 1,900.00                 | 7.05            | 111.74      | 1,896.10              | -26.10       | 65.45        | 70.46                   | 0.00                    | 0.00                   | 0.00                  |
| 2,000.00                 | 7.05            | 111.74      | 1,995.35              | -30.65       | 76.85        | 82.74                   | 0.00                    | 0.00                   | 0.00                  |
| 2,100.00                 | 7.05            | 111.74      | 2,094.59              | -35.19       | 88.26        | 95.01                   | 0.00                    | 0.00                   | 0.00                  |
| 2,200.00                 | 7.05            | 111.74      | 2,193.83              | -39.74       | 99.66        | 107.29                  | 0.00                    | 0.00                   | 0.00                  |
| 2,300.00                 | 7.05            | 111.74      | 2,293.08              | -44.29       | 111.06       | 119.57                  | 0.00                    | 0.00                   | 0.00                  |
| 2,400.00                 | 7.05            | 111.74      | 2,392.32              | -48.84       | 122.47       | 131.85                  | 0.00                    | 0.00                   | 0.00                  |
| 2,500.00                 | 7.05            | 111.74      | 2,491.57              | -53.38       | 133.87       | 144.12                  | 0.00                    | 0.00                   | 0.00                  |
| 2,600.00                 | 7.05            | 111.74      | 2,590.81              | -57.93       | 145.28       | 156.40                  | 0.00                    | 0.00                   | 0.00                  |
| 2,700.00                 | 7.05            | 111.74      | 2,690.05              | -62.48       | 156.68       | 168.68                  | 0.00                    | 0.00                   | 0.00                  |
| 2,800.00                 | 7.05            | 111.74      | 2,789.30              | -67.02       | 168.08       | 180.95                  | 0.00                    | 0.00                   | 0.00                  |
| 2,900.00                 | 7.05            | 111.74      | 2,888.54              | -71.57       | 179.49       | 193.23                  | 0.00                    | 0.00                   | 0.00                  |
| 3,000.00                 | 7.05            | 111.74      | 2,987.78              | -76.12       | 190.89       | 205.51                  | 0.00                    | 0.00                   | 0.00                  |
| 3,100.00                 | 7.05            | 111.74      | 3,087.03              | -80.67       | 202.29       | 217.78                  | 0.00                    | 0.00                   | 0.00                  |
| 3,200.00                 | 7.05            | 111.74      | 3,186.27              | -85.21       | 213.70       | 230.06                  | 0.00                    | 0.00                   | 0.00                  |
| 3,300.00                 | 7.05            | 111.74      | 3,285.51              | -89.76       | 225.10       | 242.34                  | 0.00                    | 0.00                   | 0.00                  |
| 3,400.00                 | 7.05            | 111.74      | 3,384.76              | -94.31       | 236.51       | 254.62                  | 0.00                    | 0.00                   | 0.00                  |
| 3,500.00                 | 7.05            | 111.74      | 3,484.00              | -98.86       | 247.91       | 266.89                  | 0.00                    | 0.00                   | 0.00                  |
| 3,600.00                 | 7.05            | 111.74      | 3,583.24              | -103.40      | 259.31       | 279.17                  | 0.00                    | 0.00                   | 0.00                  |
| 3,700.00                 | 7.05            | 111.74      | 3,682.49              | -107.95      | 270.72       | 291.45                  | 0.00                    | 0.00                   | 0.00                  |
| 3,800.00                 | 7.05            | 111.74      | 3,781.73              | -112.50      | 282.12       | 303.72                  | 0.00                    | 0.00                   | 0.00                  |
| 3,900.00                 | 7.05            | 111.74      | 3,880.97              | -117.05      | 293.52       | 316.00                  | 0.00                    | 0.00                   | 0.00                  |
| 4,000.00                 | 7.05            | 111.74      | 3,980.22              | -121.59      | 304.93       | 328.28                  | 0.00                    | 0.00                   | 0.00                  |
| 4,019.93                 | 7.05            | 111.74      | 4,000.00              | -122.50      | 307.20       | 330.72                  | 0.00                    | 0.00                   | 0.00                  |
| Top of Paddock           |                 |             |                       |              |              |                         |                         |                        |                       |
| 4,100.00                 | 7.05            | 111.74      | 4,079.46              | -126.14      | 316.33       | 340.55                  | 0.00                    | 0.00                   | 0.00                  |
| 4,200.00                 | 7.05            | 111.74      | 4,178.71              | -130.69      | 327.74       | 352.83                  | 0.00                    | 0.00                   | 0.00                  |
| 4,300.00                 | 7.05            | 111.74      | 4,277.95              | -135.23      | 339.14       | 365.11                  | 0.00                    | 0.00                   | 0.00                  |
| 4,400.00                 | 7.05            | 111.74      | 4,377.19              | -139.78      | 350.54       | 377.39                  | 0.00                    | 0.00                   | 0.00                  |
| 4,500.00                 | 7.05            | 111.74      | 4,476.44              | -144.33      | 361.95       | 389.66                  | 0.00                    | 0.00                   | 0.00                  |
| 4,574.13                 | 7.05            | 111.74      | 4,550.00              | -147.70      | 370.40       | 398.76                  | 0.00                    | 0.00                   | 0.00                  |
| PBHL-Dodd #667           |                 |             |                       |              |              |                         |                         |                        |                       |



Scientific Drilling  
Planning Report



Database: EDM-Julio  
Company: COG Operating LLC  
Project: Eddy County, NM (NAN27 NME)  
Site: Dodd Federal Unit #667  
Well: Dodd Federal Unit #667  
Wellbore: OH  
Design: Plan #1 7-7/8" Hole

Local Co-ordinate Reference: Site Dodd Federal Unit #667  
TVD Reference: GL Elev @ 3599.00usft  
MD Reference: GL Elev @ 3599.00usft  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature

Design Targets

| Target Name               | hit/miss target | Dip Angle<br>(°) | Dip Dir.<br>(°) | TVD<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Northing<br>(usft) | Easting<br>(usft) | Latitude         | Longitude        |
|---------------------------|-----------------|------------------|-----------------|---------------|-----------------|-----------------|--------------------|-------------------|------------------|------------------|
| PBHL-Dodd #667            |                 | 0 00             | 0 01            | 4,550 00      | -147 70         | 370 40          | 666,738 90         | 584,950 60        | 32° 49' 57 525 N | 104° 3' 24 359 W |
| - plan hits target center |                 |                  |                 |               |                 |                 |                    |                   |                  |                  |
| - Circle (radius 10 00)   |                 |                  |                 |               |                 |                 |                    |                   |                  |                  |

Casing Points

| Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Name          | Casing<br>Diameter<br>(") | Hole<br>Diameter<br>(") |
|-----------------------------|-----------------------------|---------------|---------------------------|-------------------------|
| 1,050 00                    | 1,050 00                    | 8-5/8" Casing | 8-5/8                     | 12-1/4                  |

Formations

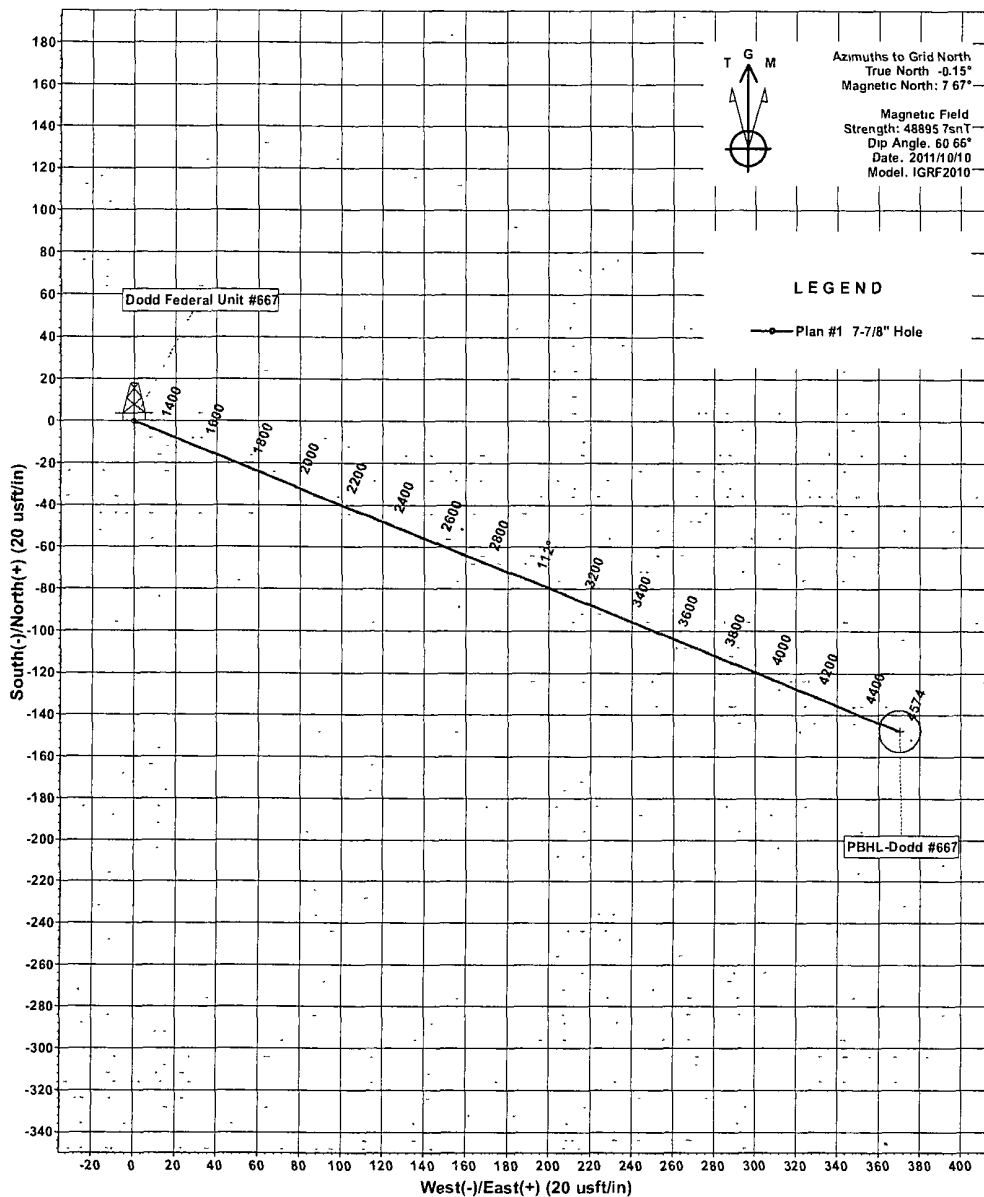
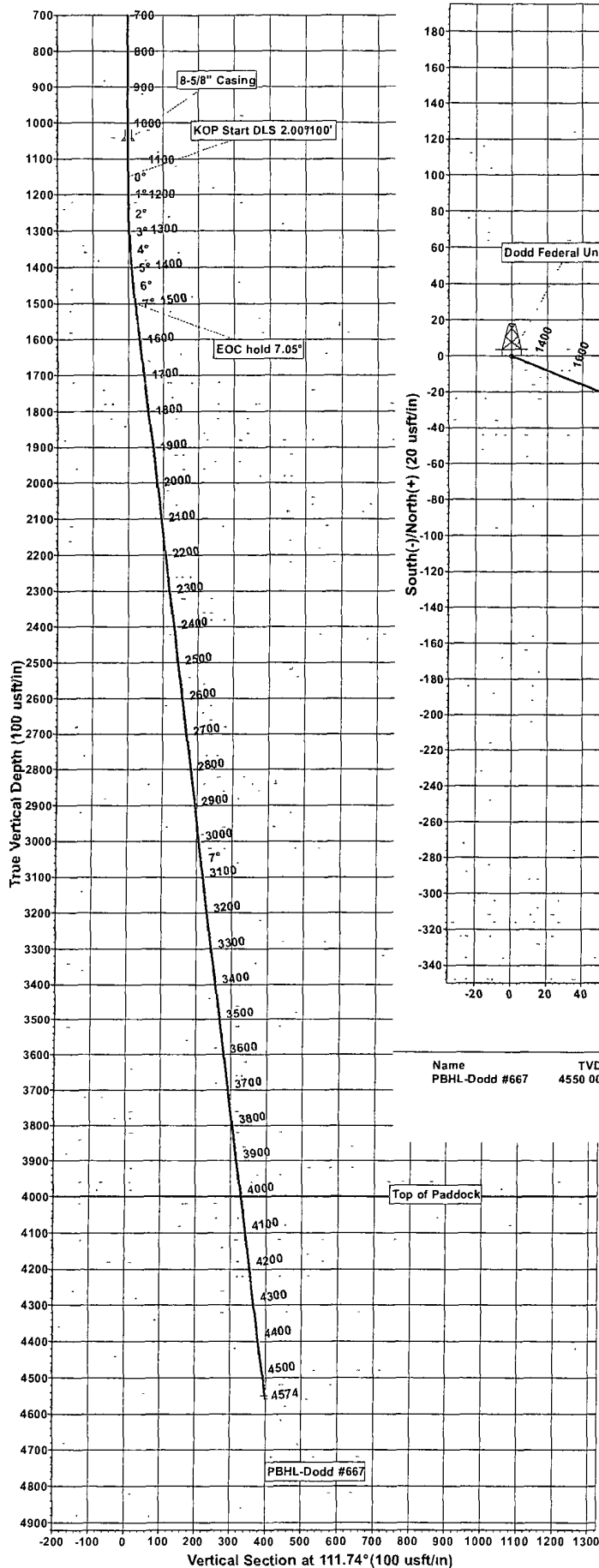
| Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Name           | Lithology | Dip<br>(°) | Dip<br>Direction<br>(°) |
|-----------------------------|-----------------------------|----------------|-----------|------------|-------------------------|
| 4,019 93                    | 4,000 00                    | Top of Paddock |           | 0 00       |                         |

Plan Annotations

| Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Local Coordinates |                 | Comment                  |
|-----------------------------|-----------------------------|-------------------|-----------------|--------------------------|
|                             |                             | +N/-S<br>(usft)   | +E/-W<br>(usft) |                          |
| 1,150 00                    | 1,150 00                    | 0 00              | 0 00            | KOP Start DLS 2.00°/100' |
| 1,502 60                    | 1,501 71                    | -8 03             | 20 13           | EOC hold 7 05°           |



Scientific Drilling for COG Operating LLC  
Site: Eddy County, NM (NAN27 NME)  
Well: Dodd Federal Unit #667  
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                 |
|----------------|---------|---------|--------|-----------|-----------|-----------------|-----------------|-----------------------|
| PBHL-Dodd #667 | 4550.00 | -147.70 | 370.40 | 666738.90 | 584950.60 | 32°49' 57.525 N | 104°3' 24.359 W | Circle (Radius 10.00) |

SECTION DETAILS

| Sec | MD      | Inc  | Azi    | TVD     | +N/-S   | +E/-W  | Dleg | TFace  | Vsect  | Target         |
|-----|---------|------|--------|---------|---------|--------|------|--------|--------|----------------|
| 1   | 0.00    | 0.00 | 0.00   | 0.00    | 0.00    | 0.00   | 0.00 | 0.00   | 0.00   |                |
| 2   | 1150.00 | 0.00 | 0.00   | 1150.00 | 0.00    | 0.00   | 0.00 | 0.00   | 0.00   |                |
| 3   | 1502.60 | 7.05 | 111.74 | 1501.71 | -8.03   | 20.13  | 2.00 | 111.74 | 21.67  |                |
| 4   | 4574.13 | 7.05 | 111.74 | 4550.00 | -147.70 | 370.40 | 0.00 | 0.00   | 398.76 | PBHL-Dodd #667 |

WELL DETAILS Dodd Federal Unit #667

| +N/-S | +E/-W | Northing  | Easting   | Ground Level | Latitude        | Longitude       | Slot |
|-------|-------|-----------|-----------|--------------|-----------------|-----------------|------|
| 0.00  | 0.00  | 666886.60 | 584580.20 | 3599.00      | 32°49' 58.997 N | 104°3' 28.696 W |      |

PROJECT DETAILS Eddy County, NM (NAN27 NME) Plan Plan #1 7-7/8" Hole (Dodd Federal Unit #667/OH)

|                                                       |                        |                 |
|-------------------------------------------------------|------------------------|-----------------|
| Geodetic System: US State Plane 1927 (Exact solution) | Created By: Julio Pina | Date: 10-Oct-11 |
| Datum: NAD 1927 (NADCON CONUS)                        |                        |                 |
| Ellipsoid: Clarke 1866                                | Checked: _____         | Date: _____     |
| Zone: New Mexico East 3001                            |                        |                 |
| System Datum: Mean Sea Level                          | Reviewed: _____        | Date: _____     |
|                                                       | Approved: _____        | Date: _____     |

**COG OPERATING LLC**

550 West Texas, Suite 1300

Midland, TX 79701

**DIRECTIONAL PLAN VARIANCE REQUEST**

**Dodd Federal Unit #667**

**EDDY, NM**

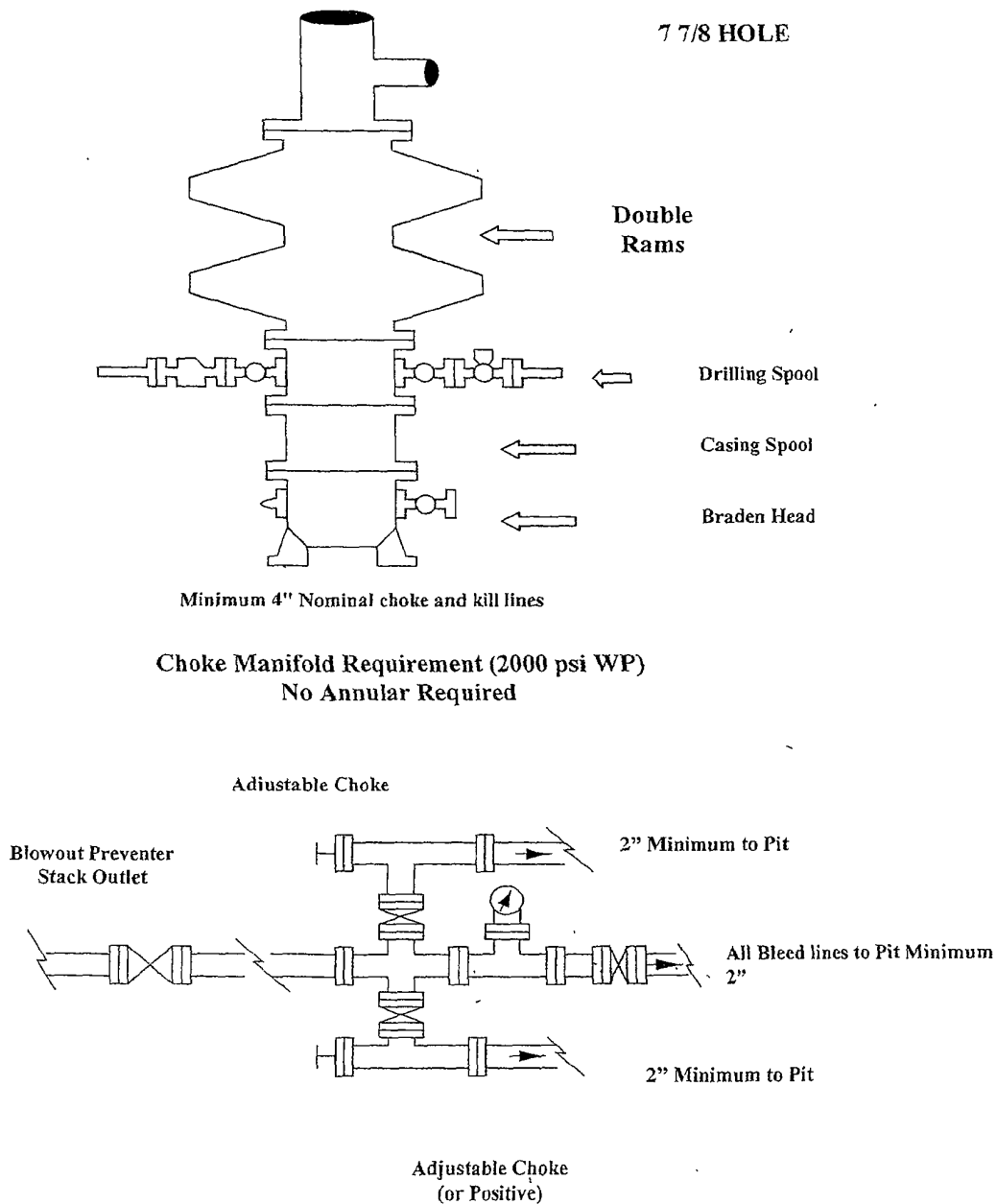
|     |                    |                            |
|-----|--------------------|----------------------------|
| SHL | 2128 FSL, 1360 FEL | Sec 15, T17S, R29E, Unit J |
| BHL | 1980 FSL, 990 FEL  | Sec 15, T17S, R29E, Unit I |

COG Operating LLC, as Operator, desires that the APD reflect the footages as stated on the surveyor's plat. However, Operator also desires to avoid inadvertently drilling the well to a non-standard location. Therefore, due to the proximity of the plat bottom hole location to the pro-ration unit hard line(s), the attached directional plan is designed to avoid the hard lines by as much as fifty feet; said fifty feet being in either (or both) the north-south and/or east-west directions as applicable.

# COG Operating LLC

## Exhibit #9

### BOPE and Choke Schematic



**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 and characteristics of hydrogen sulfide (H<sub>2</sub>S)
2. The proper use and maintenance of personal protective equipment and life support systems.
3. The proper use of H<sub>2</sub>S 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 H<sub>2</sub>S 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 H<sub>2</sub>S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H<sub>2</sub>S zone (within 3 days or 500 feet) and weekly H<sub>2</sub>S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H<sub>2</sub>S Drilling Operations Plan and the Public Protection Plan. **The concentrations of H<sub>2</sub>S 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 H<sub>2</sub>S service.
- B. All elastomers used for packing and seals shall be H<sub>2</sub>S 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 H<sub>2</sub>S environment will use the closed chamber method of testing.
- B. There will be no drill stem testing.

**EXHIBIT #7**

**WARNING**  
**YOU ARE ENTERING AN H<sub>2</sub>S**  
**AUTHORIZED PERSONNEL ONLY**

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

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

**EDDY COUNTY EMERGENCY NUMBERS**

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

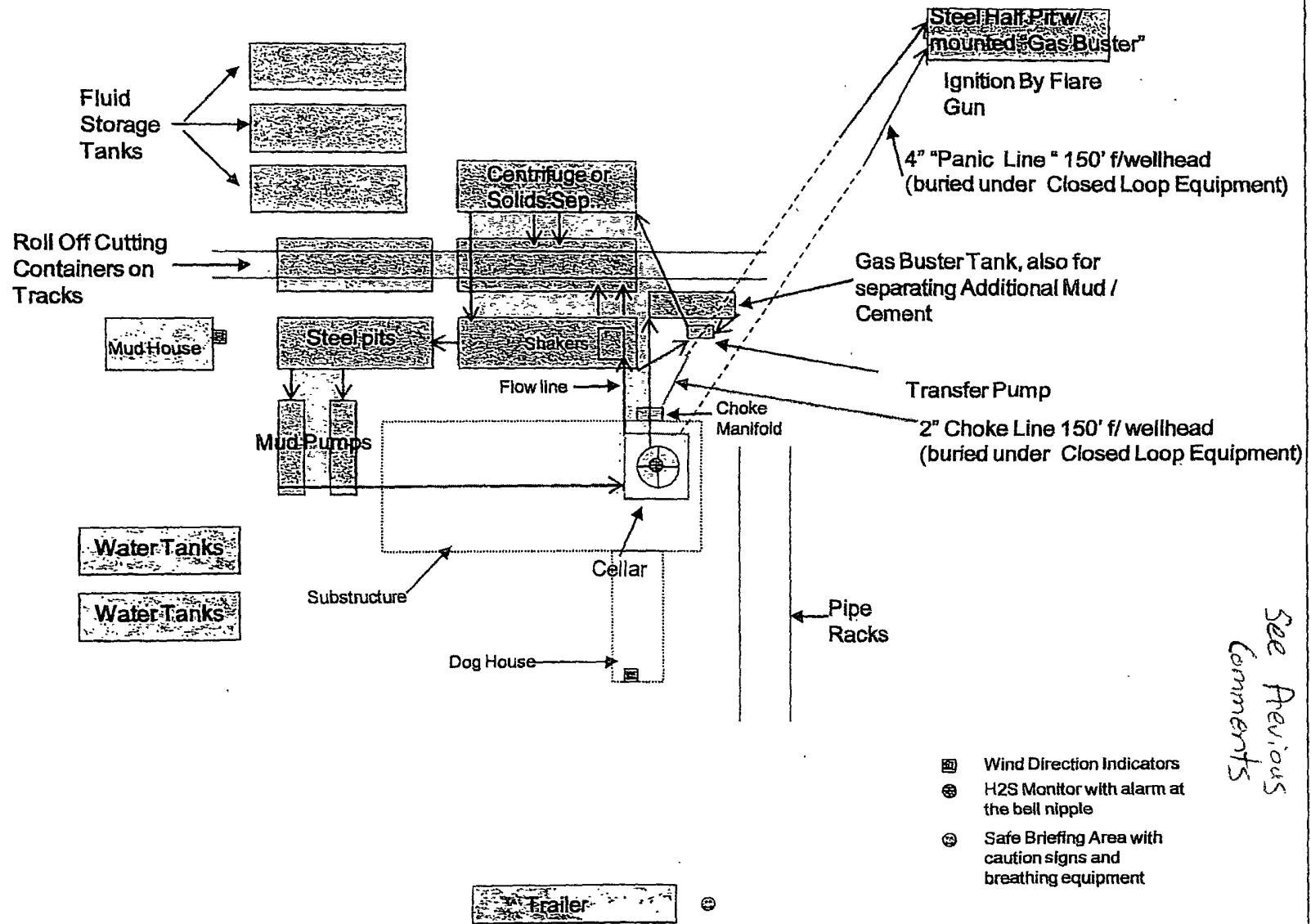
**LEA COUNTY EMERGENCY NUMBERS**

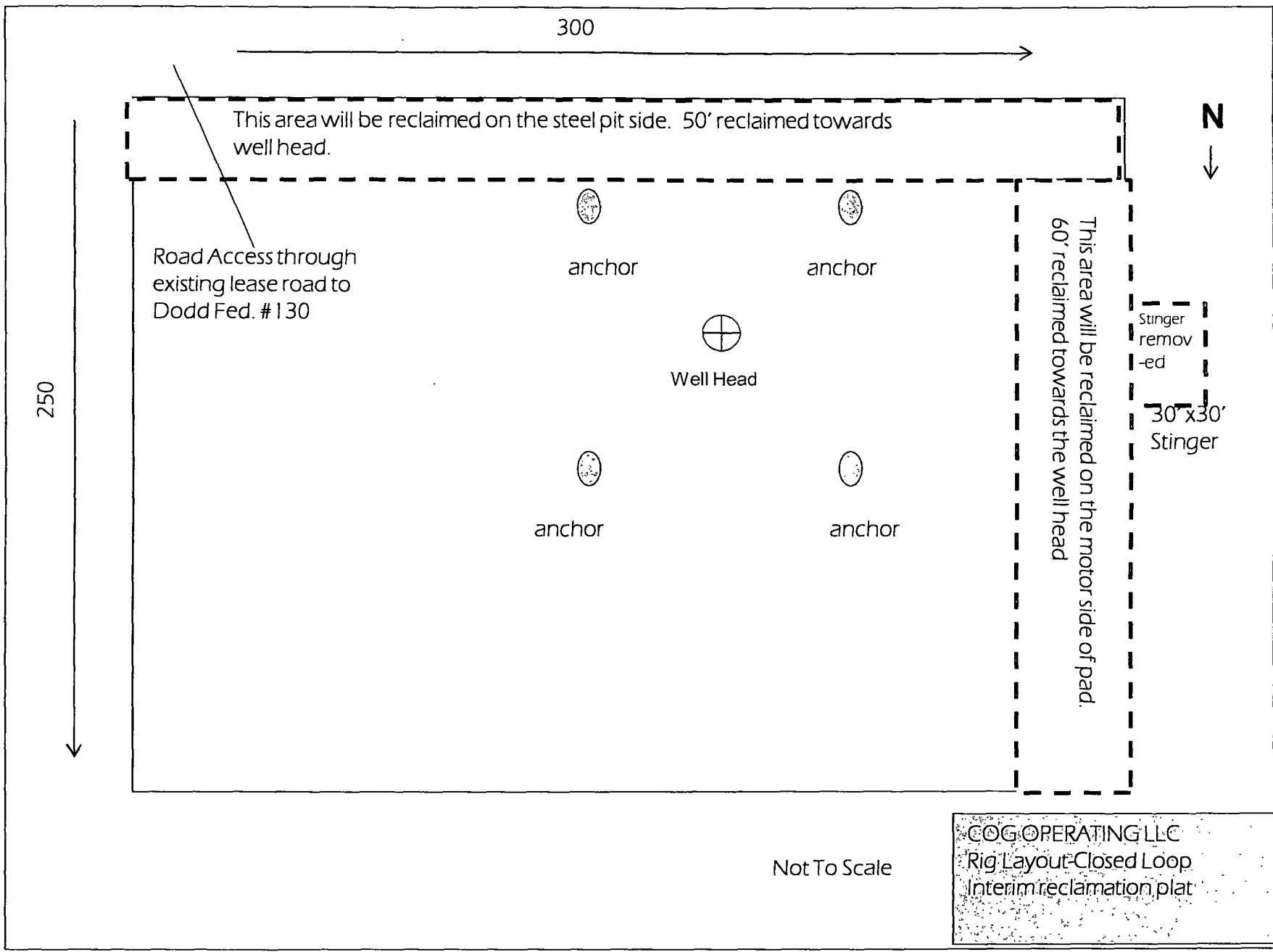
HOBBS FIRE DEPT. 575-397-9308  
HOBBS POLICE DEPT. 575-397-9285  
LEA CO. SHERIFF DEPT. 575-396-1196

COG Operating LLC

## EXHIBIT 8

Drilling Location - H2S Safety Equipment Diagram





300

N  
↓

This area will be reclaimed on the steel pit side. 50' reclaimed towards well head.

Road Access through existing lease road to Dodd Fed. #130



anchor



anchor



Well Head



anchor



anchor

This area will be reclaimed on the motor side of pad. 60' reclaimed towards the well head

Stinger removed

30'x30' Stinger

250

Not To Scale

COG OPERATING LLC  
Rig Layout-Closed Loop  
Interim reclamation plat

## PECOS DISTRICT CONDITIONS OF APPROVAL

|                       |                                    |
|-----------------------|------------------------------------|
| OPERATOR'S NAME:      | COG OPERATING LLC                  |
| LEASE NO.:            | NMLC028731A                        |
| WELL NAME & NO.:      | 667 DODD FEDERAL UNIT              |
| SURFACE HOLE FOOTAGE: | 2128' FSL & 1360' FEL              |
| BOTTOM HOLE FOOTAGE:  | 1980' FSL & 990' FEL               |
| LOCATION:             | Section 15, T.17 S., R.29 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**
- ☐ **Construction**
  - Notification
  - Topsoil
  - Closed Loop System
  - Federal Mineral Material Pits
  - Well Pads
  - Roads
- ☐ **Road Section Diagram**
- ☒ **Drilling**
  - H2S requirement
  - Logging requirement
  - Waste Material and Fluids
- ☐ **Production (Post Drilling)**
  - Well Structures & Facilities
  - Pipelines
  - Electric Lines
- ☒ **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)**

## **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) 234-6235 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 in a low profile manner in order to prevent wind/water erosion of the topsoil. The topsoil to be stripped is approximately 4 inches in depth. The topsoil will be used for interim and final reclamation.

### **C. CLOSED LOOP SYSTEM**

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**

Payment shall be made to the BLM prior to removal of any federal mineral materials. 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 twenty (20) 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**

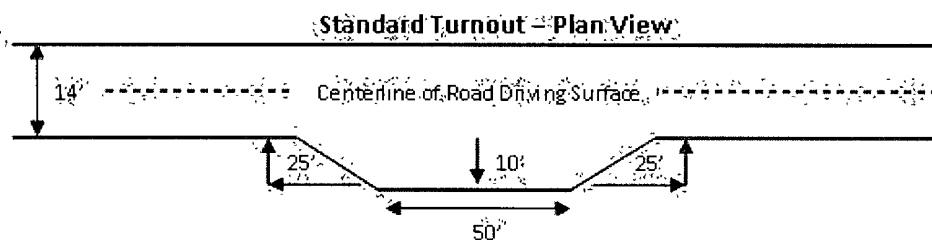
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

### **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:



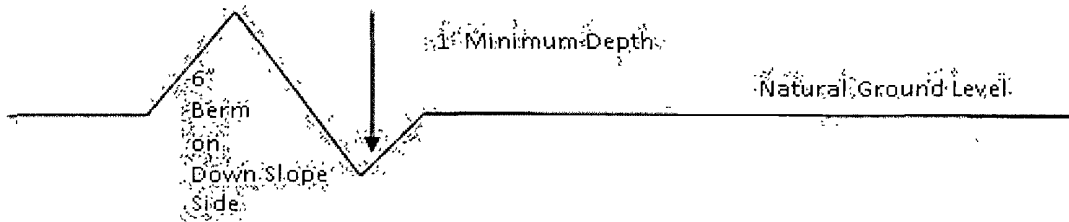
### **Drainage**

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

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

### **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**

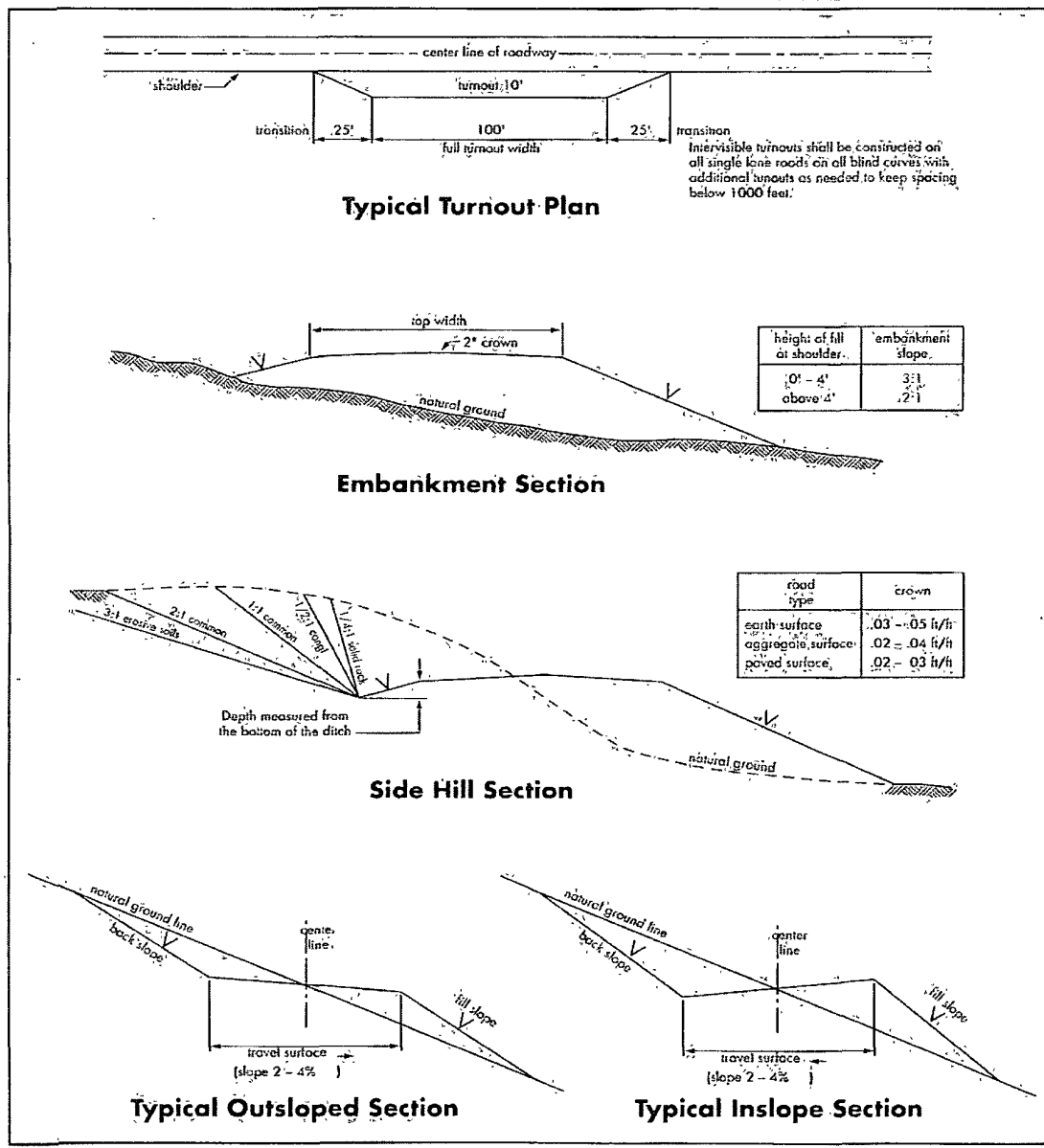
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

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 (H<sub>2</sub>S) Drilling Plan should be activated 500 feet prior to drilling into the **Grayburg** formation. **As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. 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. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a “Major” violation.**
3. **The record of the drilling rate along with the GR/N well log run from TD to surface will be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

### 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 prior to drilling out 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. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. 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 water and brine flows in the Salado and Artesia Group.**

**Possible lost circulation in the Grayburg and San Andres formations.**

1. The **13-3/8** inch surface casing shall be set at **approximately 255 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt)** 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 surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
  - b. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**
  - 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, **which is to be set at approximately 900'**, is:

☒ As proposed. If cement does not circulate see B.1.a, c-d above.

**Operator has proposed DV tool at depth of 350', but will adjust cement proportionately if moved. DV tool SHALL be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range. If an ECP is used, it is to be set a minimum of 50' below the shoe to provide cement across the shoe. If it cannot be set below the shoe, a CBL shall be run to verify cement coverage.**

a. First stage to DV tool:

- ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

b. Second stage above DV tool:

- ☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office.

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

- ☒ As proposed. Operator shall provide method of verification.

**Operator has proposed DV tool at depth of 2500', but will adjust cement proportionately if moved. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range.**

a. First stage to DV tool:

- ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve tie-back on the next stage.

b. Second stage above DV tool:

- ☒ Cement as proposed. 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. **Operator approved for either 13-5/8" or 11" BOP stack.**

2. Proposed blowout preventer (BOP) and related equipment (BOPE) meets minimum requirement.
  - a. **For surface casing only:** If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.
3. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
  - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips or where the float does not hold, the minimum wait time before cut-off is eight hours after bumping the plug or when the cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. BOP/BOPE testing can begin after the above conditions are satisfied.
  - b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
  - c. The results of the test shall be reported to the appropriate BLM office.
  - d. 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.**
  - e. 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.

#### **D. DRILL STEM TEST**

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

## **E. WASTE MATERIAL AND FLUIDS**

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

**CRW 012312**

## **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 20 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.

**C. ELECTRIC LINES (not applied for in APD)**

## **IX. 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.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation 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 that is free of contaminants 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.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

## **X. FINAL ABANDONMENT & RECLAMATION**

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory

revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

#### 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 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> |
|-----------------------------------------------------|----------------|
| Sand dropseed ( <i>Sporobolus cryptandrus</i> )     | 1.0            |
| Sand love grass ( <i>Eragrostis trichodes</i> )     | 1.0            |
| Plains bristlegrass ( <i>Setaria macrostachya</i> ) | 2.0            |

\*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = pounds pure live seed