OCD-ARTESIA

Form 3160-5
(April 2004)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE *- Other instructions on reverse side.*

1 Type of Well
☑ Oil Well ☐ Gas Well ☐ Other

2 Name of Operator
COG Operating LLC

3a Address
550 W. Texas Ave., Suite 1300 Midland, TX 79701

3b Phone No *(include area code)*
432-685-4385

4 Location of Well *(Footage, Sec, T, R, M, or Survey Description)*
SHL: 990' FNL & 1890' FWL Sec.9, T17S, R30E, Unit C
BHL: 990' FNL & 1650' FWL Sec.9, T17S, R30E, Unit C

5 Lease Serial No
NMLC-0029342D

6 If Indian, Allottee or Tribe Name
N/A

7 If Unit or CA/Agreement, Name and/or No
N/A

8 Well Name and No
Miranda Federal #4

9 API Well No
30-015-37319

10 Field and Pool, or Exploratory Area
Loco Hills; Glorieta-Yeso 96718

11 County or Parish, State
Eddy, NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☑ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☑ Other **Change Bottom Hole Location**
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13 Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones Attach the Bond under which the work will be performed or provide the Bond No on file with BLM/BIA Required subsequent reports shall be filed within 30 days following completion of the involved operations If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection)

Original BHL : 990' FNL & 1650' FWL Sec. 9, T17S, R30E, Unit C

COG respectfully requests to change the Bottom Hole Location to:
990' FNL & 330' FEL Sec. 9, T17S, R30E, Unit A

This move is requested to drill this well as a horizontal.

A revised C-102, Directional Plan and Drilling Plan are attached for your review.

RECEIVED
SEP 21 2010
NMOCD ARTESIA

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

14 I hereby certify that the foregoing is true and correct

Name *(Printed/Typed)* **Robyn M. Odom** Title **Regulatory Analyst**

Signature Robyn M. Odom Date **08/23/2010**

APPROVED
SEP 20 2010
/s/ Chris Walls
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

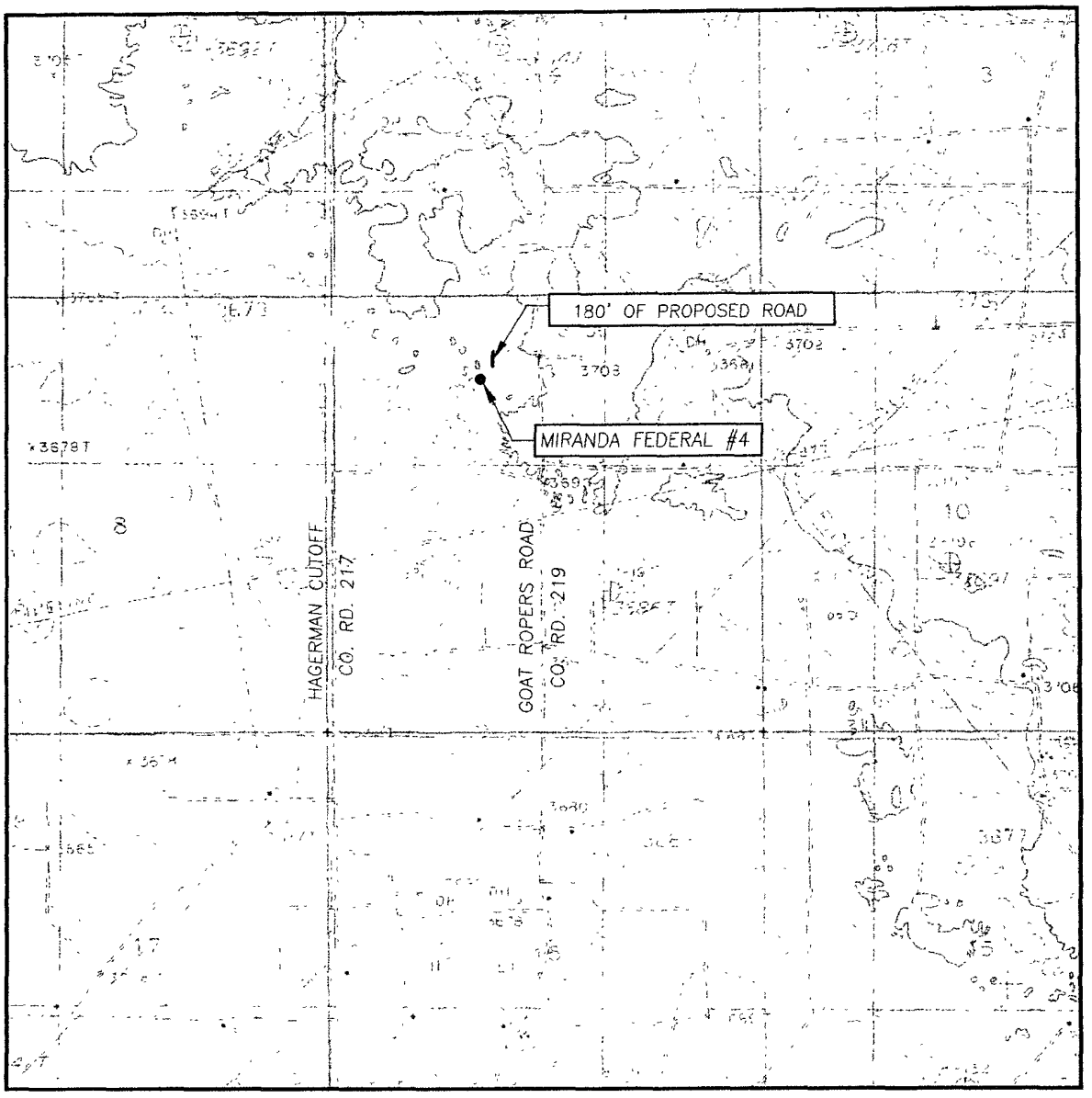
Approved by Title Date

Conditions of approval, if any, are attached Approval of this notice 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 Office

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)

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL:
LOCOHILLS, N M. – 10'

SEC. 9 TWP 17-S RGE. 30-E

SURVEY N.M.P M

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 990' FNL & 1890' FWL

ELEVATION 3692'

OPERATOR COG OPERATING, INC.

EDDYSE MIRANDA FEDERAL

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

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N M 88240
(575) 393-3117

Database:	EDM-Julio	**Local Co-ordinate Reference:**	Site Miranda Federal #4H
Company:	COG Operating LLC	**TVD Reference:**	RKB Elev (13') @ 3705 00usft (JW #4)
Project:	Eddy County, NM (NAN27 NME)	**MD Reference:**	RKB Elev (13') @ 3705 00usft (JW #4)
Site:	Miranda Federal #4H	**North Reference:**	Grid
Well:	Miranda Federal #4H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - 8¾" & 6⅛"		

Project Eddy County, NM (NAN27 NME)

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

Site Miranda Federal #4H

Site Position:		**Northing:**	674,385 60 usft	**Latitude:**	32° 51' 12 485 N
From:	Map	**Easting:**	608,842 80 usft	**Longitude:**	103° 58' 44 041 W
Position Uncertainty:	0 00 usft	**Slot Radius:**	0 "	**Grid Convergence:**	0 19 °

Well Miranda Federal #4H

Well Position	**+N/-S**	0 00 usft	**Northing:**	674,385 60 usft	**Latitude:**	32° 51' 12 485 N
	+E/-W	0 00 usft	**Easting:**	608,842 80 usft	**Longitude:**	103° 58' 44 041 W
Position Uncertainty		0 00 usft	**Wellhead Elevation:**		**Ground Level:**	3,692 00 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	2010/08/23	7 91	60 74	49,062

Design Plan #1 - 8¾" & 6⅛"

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0 00
Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**	
	0 00	0 00	0 00	89 93	

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	
4,148 00	0 00	0 00	4,148 00	0 00	0 00	0 00	0 00	0 00	0 00	
4,879 49	87 80	89 93	4,625 00	0 54	459 03	12 00	12 00	0 00	89 93	
7,484 89	87 80	89 93	4,725 00	3 60	3,062 50	0 00	0 00	0 00	0 00	PBHL-Miranda #4H

Database:	EDM-Julio	**Local Co-ordinate Reference:**	Site Miranda Federal #4H
Company:	COG Operating LLC	**TVD Reference:**	RKB Elev (13') @ 3705 00usft (JW #4)
Project:	Eddy County, NM (NAN27 NME)	**MD Reference:**	RKB Elev (13') @ 3705 00usft (JW #4)
Site:	Miranda Federal #4H	**North Reference:**	Grid
Well:	Miranda Federal #4H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - 8¾" & 6⅛"		

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
4,474 98	4,450 00	7" Casing	7	8-3/4

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
4,148 00	4,148 00	0 00	0 00	KOP Start Build 12 00°/100'
4,879 49	4,625 00	0 54	459 03	EOC hold 87 80°

CONCHO

Scientific Drilling for COG Operating LLC
Site: Eddy County, NM (NAN27 NME)
Well: Miranda Federal #4H
Wellbore: OH
Design: Plan #1 - 8¾" & 6⅛"

Scientific Drilling
Directional Drilling Operations

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	4148.00	0.00	0.00	4148.00	0.00	0.00	0.00	0.00	0.00	
3	4879.49	87.80	89.93	4625.00	0.54	459.03	12.00	89.93	459.03	
4	7484.89	87.80	89.93	4725.00	3.60	3062.50	0.00	0.00	3062.50	PBHL-Miranda #4H

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

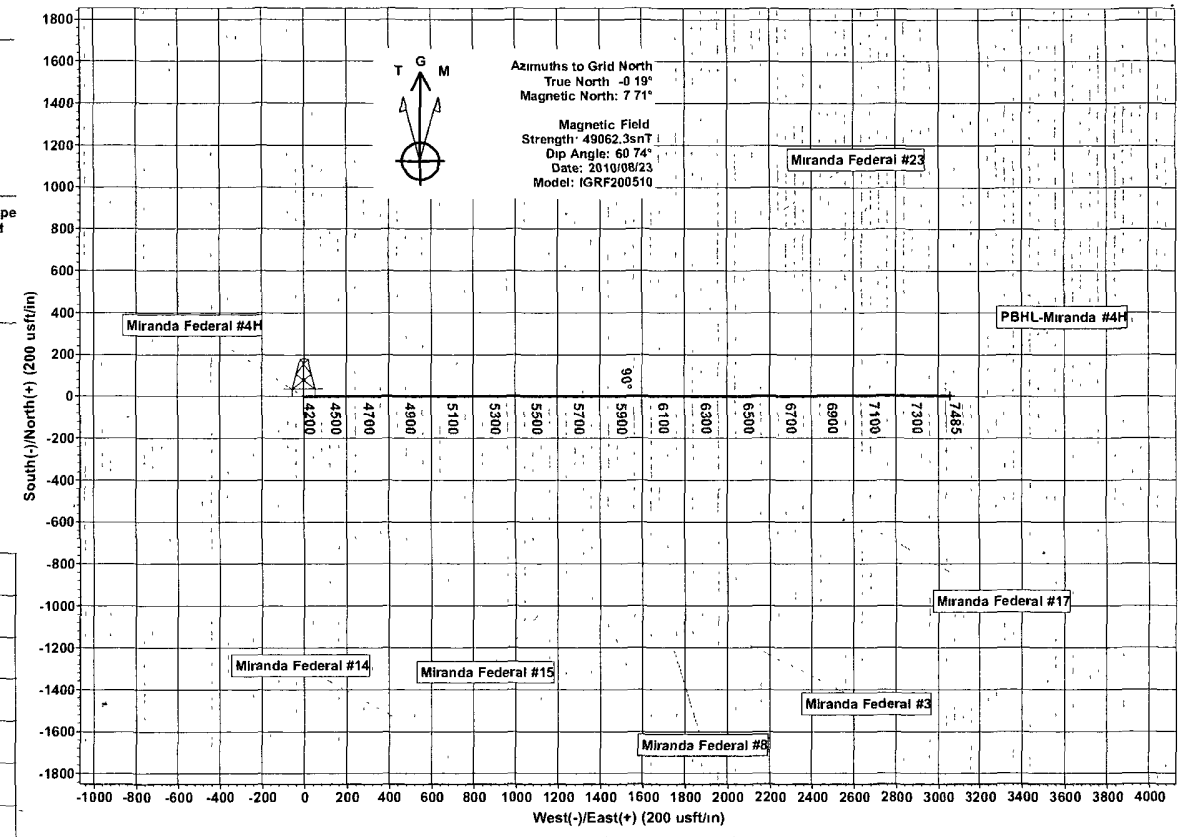
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL-Miranda #4H	4725.00	3.60	3062.50	674389.20	611905.30	32°51' 12.418 N	103°58' 8.140 W	Point

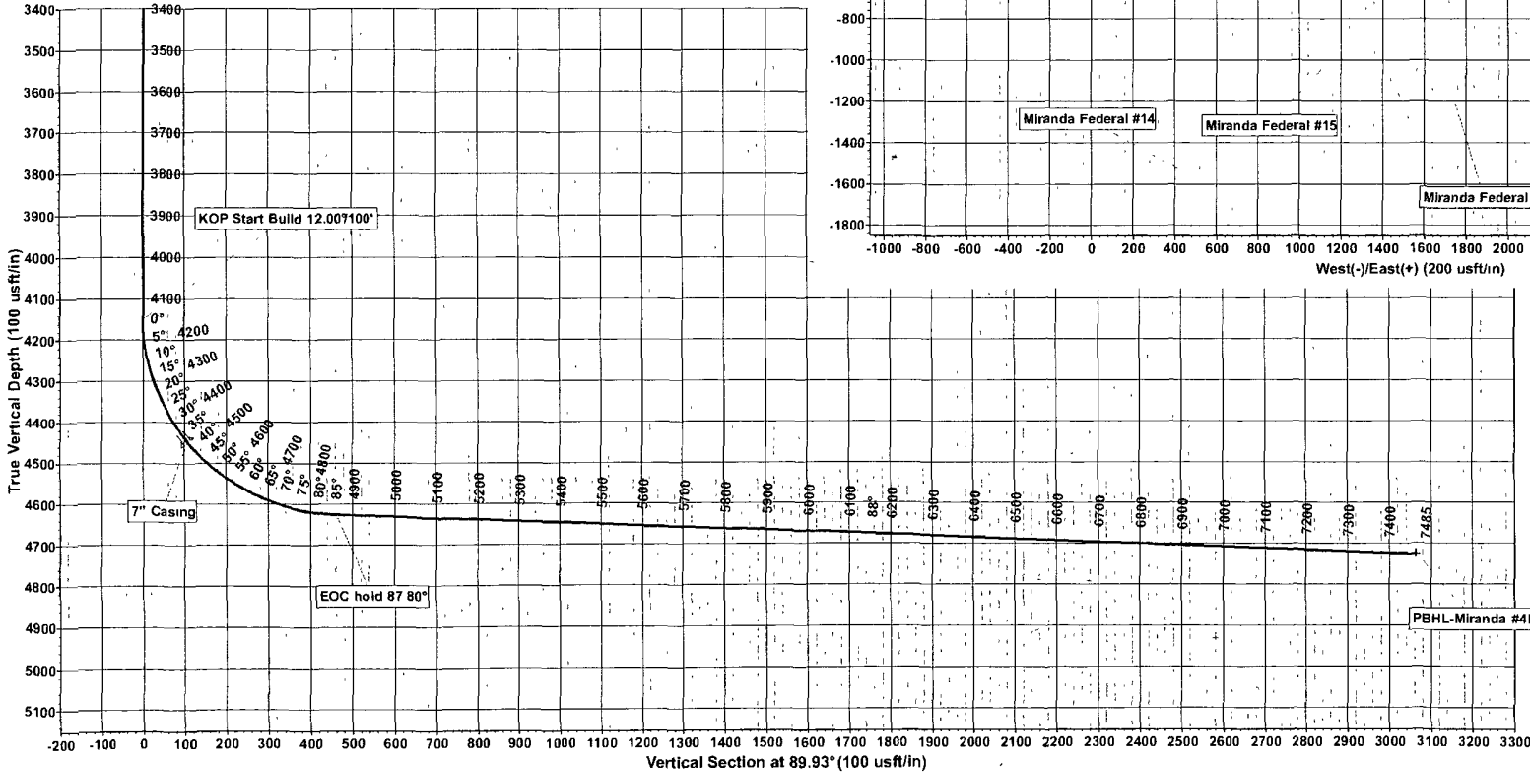
WELL DETAILS Miranda Federal #4H

Ground Level 3692.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	674385.60	608842.80	32°51' 12.485 N	103°58' 44.041 W	

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 7.72°
To convert a True Direction to a Grid Direction, Subtract 0.19°





LEGEND

Plan #1 - 8¾" & 6⅛"

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 - 8¾" & 6⅛" (Miranda Federal #4H/OH)

Created By: Julio Pina Date: 23-Aug-10

Checked _____ Date _____

Reviewed: _____ Date. _____

4. Casing Program

See COA

Hole Size	Interval	OD Casing	Weight	Grade	Jt., Condition	Jt.	burst/collapse/tension
17 ½"	0-~~400'~~ 380	13 3/8"	48#	J-55	New	ST&C	8.71/3.724/14.91
12 ¼"	0-1400	9 5/8"	40#	J or K-55	New	ST&C	4.43/3.45/5.68
8 ¾"	0-4700'	7"	29#	L-80	New	LT&C	4.43/3.45/5.68
6 1/8"	~~4700~~-T.D. 4600	4 1/2"	13.5#	L-80	New	LT&C	4.75/4.20/4.80

5. Cement Program

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

9 5/8" Intermediate Casing:

12-1/4" Hole:
Single Stage: 50:50:10, 200 sx lead, yield-2.45 + Class C, 200 sx tail, yield-1.32, back to surface.

7" Production Casing:

8-3/4" Hole:
Single Stage: C w/4% gel, 500 sx Lead, yield-1.72 + 50:50:2, 200 sx Tail, yield-1.33, circulated to surface.

4-1/2" Production Liner:

6-1/8" Hole:
Uncemented, with packers for isolation, and requesting permission for only 100' liner overlap.

6. Minimum Specifications for Pressure Control

The blowout preventer equipment (BOP) shown in Exhibit #9 will consist of a double ram-type (2000 psi WP) preventer. This unit will be hydraulically operated and the ram type preventer will be equipped with blind rams on top of 4 1/2" drill pipe rams on the bottom. The BOP will be nippled up on the 13 3/8" surface casing with BOP equipment and tested ~~together~~ to 2000 psi ~~by rig pump in one~~ test. The BOP will then be nippled up on the 9 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) with a 2000 psi WP rating.

See COA

CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**COG Operating**
LEASE NO.:	**NMCL-029342D**
WELL NAME & NO.:	**Miranda Federal 4**
API NUMBER:	**30-015-37317**
LOCATION:	**Section 9, T. 17 S., R 30 E., NMPM**
COUNTY:	**Eddy County, New Mexico**

I. 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 **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 (horizontal well – vertical portion of hole) 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 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 380 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt)** and cemented to the surface. **If the salt is encountered at a shallower depth, the casing is to be set a minimum of 25' above the salt.**

    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 **9-5/8** inch intermediate casing is:

   ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.
   This casing is to be set in the Tansill formation.

3. The minimum required fill of cement behind the **7** inch production casing is:

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

Liner must tie back a minimum of 100 feet into previous casing.

4. Cement not required on the **4-1/2"** casing. **Packer system being used.**

5. 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. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi.

   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) prior to initiating the test.

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.

CRW 092010