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)*
1650' FNL & 1650' FWL Sec.9, T17S, R30E, Unit F

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 #13**

9 API Well No **30-015-38052**

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 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 Location :
1650' FNL & 1650' FWL Sec. 9, T17S, R30E, Unit F

COG respectfully requests to change the Location to:
SHL: 1650' FNL & 1650' FWL Sec. 9, T17S, R30E, Unit F
BHL: 1650' FNL & 330' FEL Sec. 9, T17S, R30E, Unit H

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.

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 Date **07/29/2010**

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

APPROVED
AUG 20 2010
/s/ Dustin Winkler
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD 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)

District I
1625 N. French Dr., Hobbs, NM 88240

District II
1301 W. Grand Avenue, Artesia, NM 88210

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

District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

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

Form C-102
Revised October 15, 2009

Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number	2 Pool Code	3 Pool Name
30-015- 38052	96718	LOCO HILLS; GLORIETA-YESO

4 Property Code	5 Property Name	6 Well Number
37868	MIRANDA FEDERAL	13

7 OGRID No	8 Operator Name	9 Elevation
229137	COG OPERATING LLC	3692.5

10 Surface Location

UL or lot	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
F	9	17 S	30 E		1650	NORTH	1650	WEST	EDDY

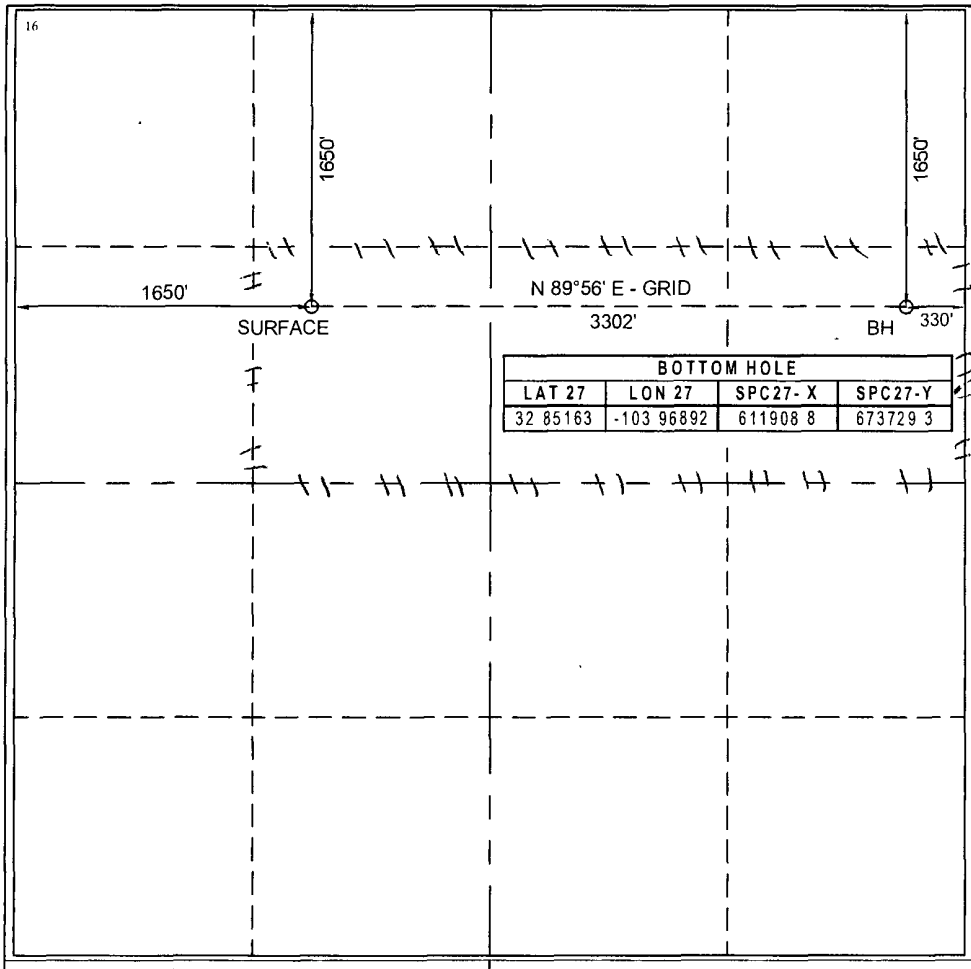
11 Bottom Hole Location If Different From Surface

UL or lot	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	9	17 S	30 E		1650	NORTH	330	EAST	EDDY

12 Dedicated Acres	13 Joint or Infill	14 Consolidation Code	15 Order No.
120			

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.

16



BOTTOM HOLE			
LAT 27	LON 27	SPC27- X	SPC27-Y
32 85163	-103 96892	611908 8	673729 3

NAD27 GEOGRAPHIC COORDINATES		NAD27 SPC - NM EAST	
LAT: 32.85166	LON: -103 97968	X = 608606.5	Y = 673725.4

17 OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore enter by the division.

Signature 8/2/2010
Date

Robyn Odom
Printed Name

18 SURVEYOR CERTICATION

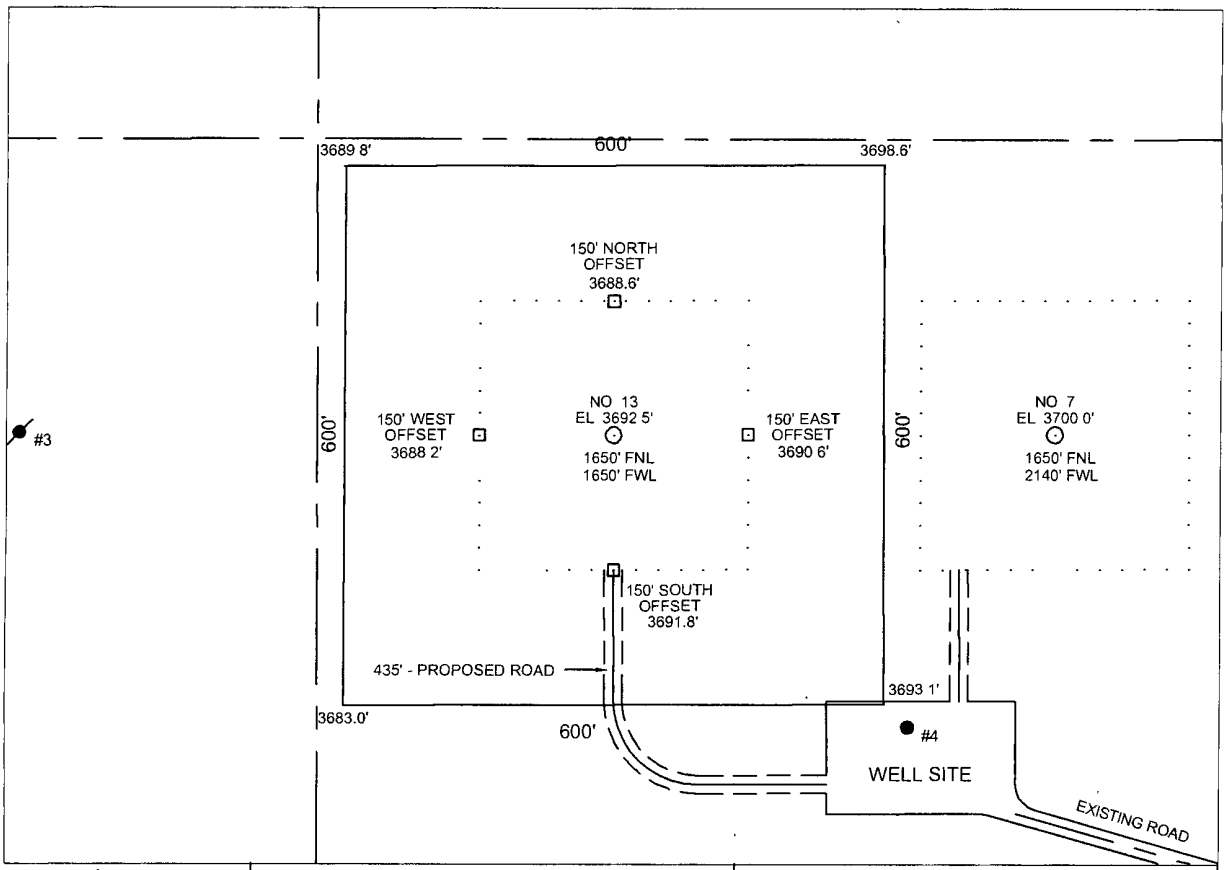
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

03/10/2010
Date of Survey

Signature and Seal of Professional Surveyor

BRUCE R. PENNELL
NEW MEXICO
9062
REGISTERED PROFESSIONAL LAND SURVEYOR

Bruce R Pennell
Certificate Number 9062



NAD27 GEOGRAPHIC COORDINATES		NAD83 GEOGRAPHIC COORDINATES	
LAT. 32.85166	LON. -103.97968	LAT: 32°51'06 378" N.	LON: 103°58'48.667" W.

NORTH

0' 200' 400' 800'

SCALE 1" = 200'

DATUM NEW MEXICO EAST ZONE - NAD83 (HARN)

DIRECTIONS TO LOCATION

1. FROM THE INTERSECTION OF U S HIGHWAY 82 AND CR 217 (HAGGERMAN CUTOFF RD) AT LOCO HILLS, NEW MEXICO, 20.6 MILES EAST OF ARTESIA, NEW MEXICO.

2. THEN NORTH ON CR 217, 1 81 MILES TO A LEASE ROAD ON THE RIGHT,

3 THEN EAST ON THE LEASE ROAD, 0.48 MILES TO THE INTERSECTION OF CR 218 (GOAT ROPERS RD),

4 THEN NORTH ON CR 218, AT 0.27 MILES PASS THE SOUTH LINE OF THE MIRANDA FEDERAL LEASE, 0 35 MILES IN ALL TO A LEASE ROAD ON THE LEFT;

5 THEN NORTHWESTERLY ON THE LEASE ROAD, AT 0.11MI CROSSING AN EXISTING WELL SITE AND VEERING WEST, 0 14 MILES TO THE PROPOSED NO 13 LEASE ROAD;

6. THEN WEST, TURNING NORTH, 0.08 MILES TO THE SOUTH LINE OF THE NO. 13 WELL SITE

A. E. FULLER & ASSOCIATES
LAND SURVEYORS
AL FULLER
Cell - (432) 559-6718
Email - al@aefuller.com
Fax. (817) 594-8437
3600 W. Baumann
Midland, TX 79703
www aefuller com

COG OPERATING LLC
MIRANDA FEDERAL NO. 13
SECTION 9 - TOWNSHIP 17 S - RANGE 30 E
EDDY COUNTY, NM
N 88 E - 24.6 MILES FROM ARTESIA, NM

DATE: 03/10/2010 | USGS QUAD LOCO HILLS

NAD27 GEOGRAPHIC COORDINATES		NAD27 SPC - NM EAST	
LAT 32 85166	LON -103 97968	X = 608606 5	Y = 673725 4

NORTH

0 MI 1/4 SCALE: 1" = 1000' 3/4 1 MILE

DATUM NEW MEXICO EAST ZONE - NAD83 (HARN)

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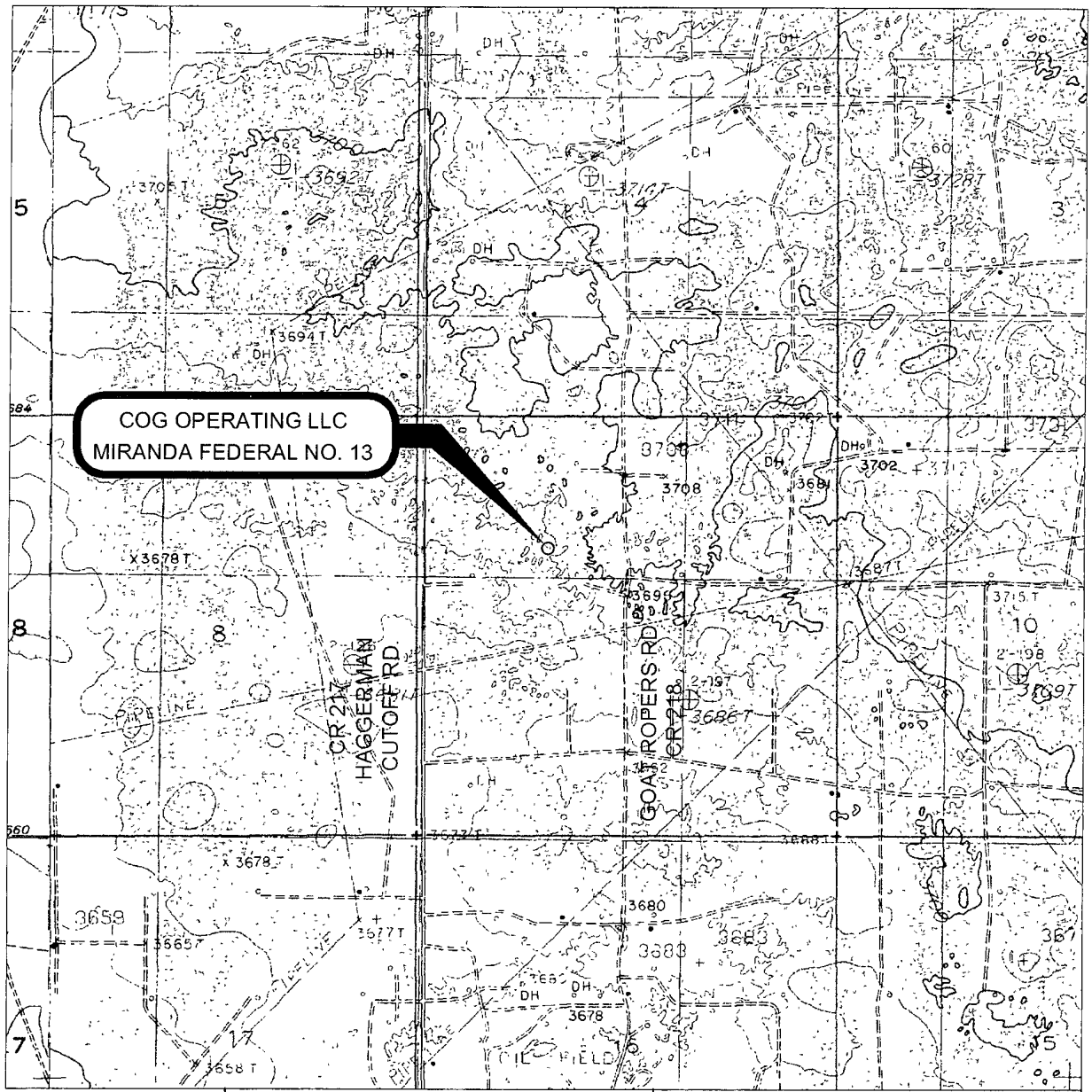
COG OPERATING LLC
MIRANDA FEDERAL NO. 13
SECTION 9 - TOWNSHIP 17 S - RANGE 30 E
EDDY COUNTY, NM
N 88 E - 24 6 MILES FROM ARTESIA, NM

DATE 03/10/2010 | USGS QUAD LOCO HILLS



NAD27 GEOGRAPHIC COORDINATES		NAD27 SPC - NM EAST	
LAT 32 85166	LON. -103.97968	X = 608606 5	Y = 673725 4

NORTH

0 MI. 1/2 SCALE: 1" = 2000' 1 1/2 2 MILES

DATUM NEW MEXICO EAST ZONE - NAD83 (HARN)

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TOPOGRAPHIC MAP

COG OPERATING LLC

MIRANDA FEDERAL NO. 13

SECTION 9 - TOWNSHIP 17 S - RANGE 30 E

EDDY COUNTY, NM

N 88 E - 24 6 MILES FROM ARTESIA, NM

DATE: 03/10/2010 | USGS QUAD LOCO HILLS

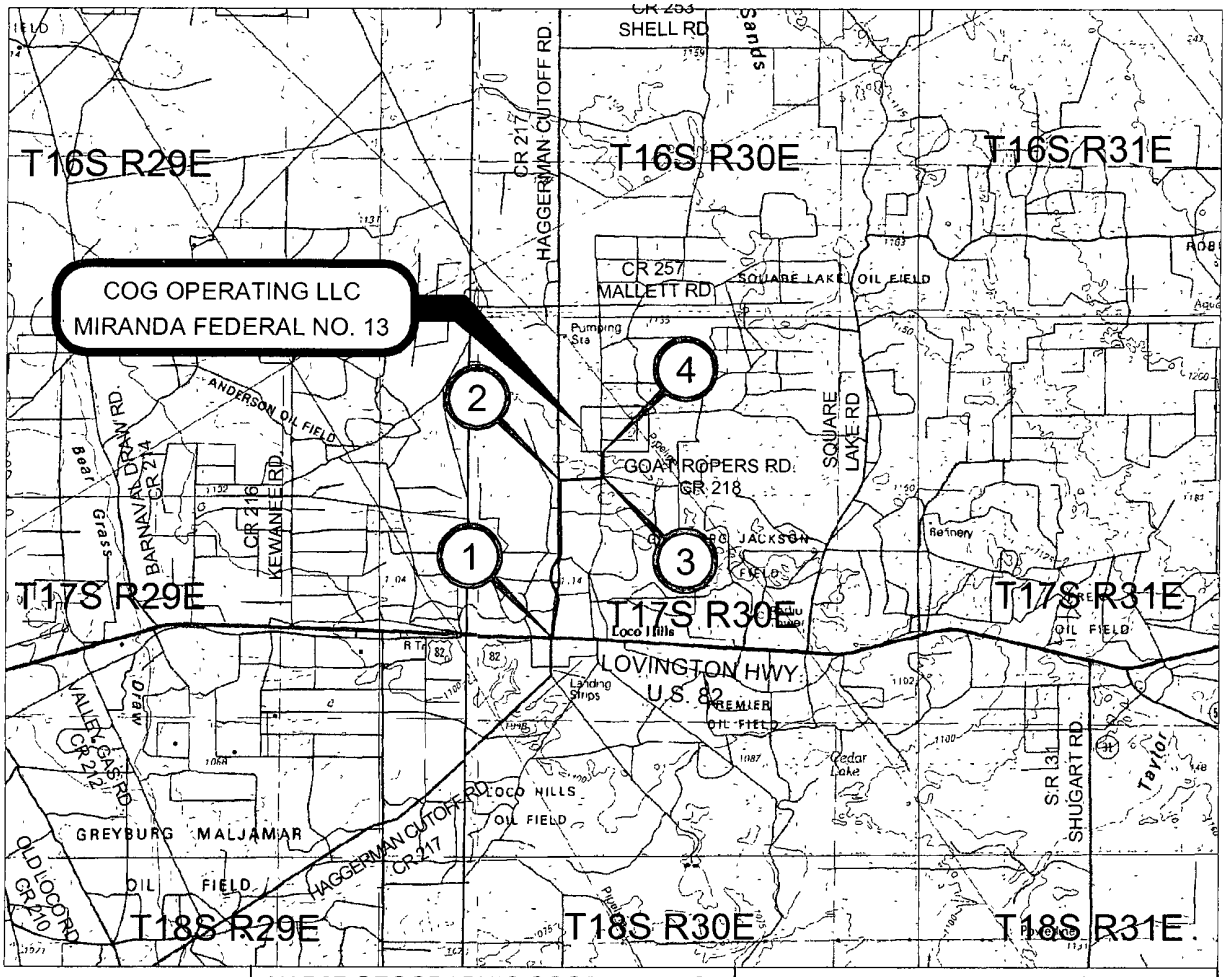
DIRECTIONS TO LEASE

1 FROM THE INTERSECTION OF U S HIGHWAY 82 AND CR 217 (HAGGERMAN CUTOFF RD) AT LOCO HILLS, NEW MEXICO, 20 6 MILES EAST OF ARTESIA, NEW MEXICO·

2 THEN NORTH ON CR 217, 1 81 TO LEASE ROAD ON THE RIGHT,

3. THEN EAST ON THE LEASE ROAD, 0 48 MILES TO THE INTERSECTION OF CR 218 (GOAT ROPERS RD),

4 THEN NORTH ON CR 218, 0 27 MILES TO THE SOUTH LINE OF THE MIRANDA FEDERAL LEASE.



NAD27 GEOGRAPHIC COORDINATES		NAD27 SPC - NM EAST	
LAT 32 85166	LON -103 97968	X = 608606.5	Y = 673725 4

NORTH

0 MI SCALE. 1" = 2 MILES 4 MILES

DATUM NEW MEXICO EAST ZONE - NAD83 (HARN) IMAGE HOBBS, NM - 1 100000 SERIES

A. E. FULLER & ASSOCIATES
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Midland, TX 79703

VICINITY MAP

COG OPERATING LLC
MIRANDA FEDERAL NO. 13
SECTION 9 - TOWNSHIP 17 S - RANGE 30 E
EDDY COUNTY, NM
N 88 E - 24.6 MILES FROM ARTESIA, NM

DATE. 03/10/2010 | USGS QUAD LOCO HILLS

www aefuller.com

CONCHO

COG Operating LLC

Eddy County(NAD27)
Miranda Federal
#13
OH

Plan: Plan #1

Pathfinder X & Y Planning Report

03 August, 2010

PATHFINDER

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #13
Project:	Eddy County(NAD27)	**TVD Reference:**	WELL @ 3711.50ft (19' KB)
Site:	Miranda Federal	**MD Reference:**	WELL @ 3711 50ft (19' KB)
Well:	#13	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	Midland Database

Project Eddy County(NAD27)

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

Site Position:		**Northing:**	673,725 400 ft	**Latitude:**	32° 51' 5.960 N
From:	Map	**Easting:**	608,606 500 ft	**Longitude:**	103° 58' 46.837 W
Position Uncertainty:	0.00 ft	**Slot Radius:**	"	**Grid Convergence:**	0.19 °

Well #13

Well Position	**+N/-S**	0.00 ft	**Northing:**	673,725.400 ft	**Latitude:**	32° 51' 5 960 N
	+E/-W	0 00 ft	**Easting:**	608,606 500 ft	**Longitude:**	103° 58' 46 837 W
Position Uncertainty		0.00 ft	**Wellhead Elevation:**	ft	**Ground Level:**	3,692.50 ft

Wellbore OH

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	08/03/2010	7.93	60.72	49,061

Design Plan #1

Audit Notes:

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

Vertical Section:	**Depth From (TVD) (ft)**	**+N/-S (ft)**	**+E/-W (ft)**	**Direction (°)**
	0 00	0.00	0 00	89 93

Survey Tool Program **Date** 08/03/2010

From (ft)	**To (ft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
0.00	7,724.13	Plan #1 (OH)	MWD	MWD - Standard

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #13
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Well:	#13	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	Midland Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
0.00	0.00	0.00	0.00	-3,711.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50
100.00	0.00	0.00	100.00	-3,611.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50
200.00	0.00	0.00	200.00	-3,511.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50
300.00	0.00	0.00	300.00	-3,411.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50
400.00	0.00	0.00	400.00	-3,311.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50
500.00	0.00	0.00	500.00	-3,211.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50
600.00	0.00	0.00	600.00	-3,111.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50
700.00	0.00	0.00	700.00	-3,011.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50
800.00	0.00	0.00	800.00	-2,911.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50
900.00	0.00	0.00	900.00	-2,811.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50
1,000.00	0.00	0.00	1,000.00	-2,711.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50
1,100.00	0.00	0.00	1,100.00	-2,611.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50
1,200.00	0.00	0.00	1,200.00	-2,511.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50
1,300.00	0.00	0.00	1,300.00	-2,411.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50
1,400.00	0.00	0.00	1,400.00	-2,311.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50
1,500.00	0.00	0.00	1,500.00	-2,211.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50
1,600.00	0.00	0.00	1,600.00	-2,111.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50
1,700.00	0.00	0.00	1,700.00	-2,011.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50
1,800.00	0.00	0.00	1,800.00	-1,911.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50
1,900.00	0.00	0.00	1,900.00	-1,811.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50
2,000.00	0.00	0.00	2,000.00	-1,711.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50
2,100.00	0.00	0.00	2,100.00	-1,611.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50
2,200.00	0.00	0.00	2,200.00	-1,511.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50
2,300.00	0.00	0.00	2,300.00	-1,411.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50
2,400.00	0.00	0.00	2,400.00	-1,311.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50
2,500.00	0.00	0.00	2,500.00	-1,211.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50
2,600.00	0.00	0.00	2,600.00	-1,111.50	0.00	0.00	0.00	0.00	673,725.40	608,606.50

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #13
Project:	Eddy County(NAD27)	TVD Reference:	WELL @ 3711.50ft (19' KB)
Site:	Miranda Federal	MD Reference:	WELL @ 3711 50ft (19' KB)
Well:	#13	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	Midland Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
2,700.00	0 00	0 00	2,700.00	-1,011.50	0.00	0.00	0 00	0.00	673,725 40	608,606.50
2,800.00	0 00	0.00	2,800.00	-911 50	0.00	0 00	0.00	0.00	673,725.40	608,606.50
2,900.00	0 00	0.00	2,900 00	-811 50	0 00	0 00	0 00	0.00	673,725.40	608,606.50
3,000.00	0.00	0.00	3,000.00	-711.50	0 00	0.00	0 00	0.00	673,725 40	608,606 50
3,100 00	0.00	0 00	3,100 00	-611.50	0 00	0.00	0.00	0.00	673,725.40	608,606 50
3,200.00	0.00	0 00	3,200.00	-511.50	0 00	0.00	0.00	0 00	673,725 40	608,606 50
3,300.00	0 00	0 00	3,300.00	-411 50	0.00	0.00	0.00	0 00	673,725 40	608,606.50
3,400 00	0 00	0.00	3,400.00	-311.50	0.00	0 00	0.00	0 00	673,725.40	608,606 50
3,500.00	0 00	0.00	3,500.00	-211 50	0 00	0 00	0.00	0.00	673,725 40	608,606.50
3,600.00	0 00	0.00	3,600.00	-111 50	0.00	0 00	0 00	0 00	673,725 40	608,606.50
3,700.00	0 00	0.00	3,700 00	-11 50	0 00	0 00	0.00	0.00	673,725 40	608,606.50
3,800 00	0 00	0.00	3,800.00	88.50	0 00	0.00	0 00	0 00	673,725.40	608,606.50
3,900.00	0 00	0.00	3,900 00	188.50	0 00	0.00	0 00	0 00	673,725.40	608,606 50
4,000.00	0 00	0 00	4,000.00	288.50	0 00	0.00	0 00	0.00	673,725.40	608,606 50
4,100.00	0.00	0.00	4,100.00	388.50	0 00	0 00	0 00	0.00	673,725.40	608,606 50
4,147.50	0.00	0 00	4,147 50	436 00	0 00	0.00	0.00	0 00	673,725.40	608,606.50
4,150 00	0.30	89.93	4,150 00	438.50	0.00	0.01	0 01	11.99	673,725.40	608,606.51
4,175 00	3 30	89.93	4,174 98	463.48	0 00	0 79	0.79	11.99	673,725 40	608,607.29
4,200 00	6.30	89 93	4,199 89	488.39	0 00	2.88	2.88	11.99	673,725.40	608,609 38
4,225 00	9.29	89 93	4,224 66	513 16	0 01	6 27	6 27	11.99	673,725 41	608,612 77
4,250 00	12.29	89 93	4,249 22	537 72	0.01	10 95	10 95	11.99	673,725 41	608,617 45
4,275.00	15.29	89 93	4,273 49	561 99	0.02	16 91	16.91	11.99	673,725 42	608,623.41
4,300 00	18 29	89 93	4,297.42	585 92	0 03	24 13	24 13	11 99	673,725 43	608,630.63
4,325.00	21.29	89 93	4,320.95	609.45	0.04	32 59	32 59	11.99	673,725.44	608,639 09
4,350.00	24.28	89 93	4,343.99	632 49	0.05	42 27	42.27	11 99	673,725 45	608,648 77
4,375.00	27.28	89.93	4,366.50	655 00	0.06	53.15	53 15	11 99	673,725 46	608,659 65
4,400 00	30.28	89 93	4,388.41	676.91	0.08	65.18	65.18	11 99	673,725.48	608,671.68

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #13
Project:	Eddy County(NAD27)	TVD Reference:	WELL @ 3711 50ft (19' KB)
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4,425 00	33.28	89 93	4,409 66	698.16	0 10	78.35	78 35	11.99	673,725 50	608,684.85
4,450 00	36.28	89 93	4,430.19	718 69	0 11	92 60	92 60	11.99	673,725 51	608,699.10
4,475.00	39.27	89.93	4,449 95	738.45	0 13	107.92	107.92	11 99	673,725.53	608,714.42
4,500.00	42 27	89.93	4,468 88	757 38	0.15	124.24	124.24	11 99	673,725 55	608,730 74
4,525 00	45 27	89.93	4,486.93	775.43	0.17	141.53	141.53	11 99	673,725 57	608,748 03
4,550 00	48.27	89 93	4,504 05	792.55	0 20	159.74	159 74	11 99	673,725 60	608,766 24
4,575.00	51.26	89.93	4,520.20	808 70	0 22	178 83	178.83	11 99	673,725.62	608,785 33
4,600.00	54 26	89.93	4,535 33	823.83	0 24	198.73	198.73	11.99	673,725 64	608,805 23
4,625.00	57 26	89 93	4,549 39	837.89	0 27	219.39	219 39	11 99	673,725 67	608,825 89
4,650 00	60 26	89.93	4,562.35	850.85	0.29	240 77	240.77	11.99	673,725 69	608,847 27
4,675 00	63.26	89.93	4,574 18	862.68	0 32	262 79	262.79	11 99	673,725 72	608,869 29
4,700 00	66 25	89 93	4,584 84	873.34	0 35	285 40	285.40	11 99	673,725 75	608,891 90
4,725.00	69 25	89 93	4,594.31	882 81	0.38	308.53	308.53	11.99	673,725 78	608,915.03
4,750.00	72.25	89.93	4,602.55	891 05	0.41	332.13	332 13	11.99	673,725.81	608,938 63
4,775 00	75 25	89.93	4,609.54	898.04	0.44	356.13	356 13	11.99	673,725.84	608,962 63
4,800.00	78 25	89 93	4,615.27	903 77	0.46	380 46	380.46	11 99	673,725.86	608,986 96
4,825 00	81.24	89.93	4,619 72	908.22	0.49	405.06	405.06	11 99	673,725 89	609,011 56
4,850 00	84 24	89 93	4,622 88	911.38	0 53	429 86	429.86	11 99	673,725 93	609,036 36
4,875.00	87.24	89.93	4,624.74	913.24	0 56	454.79	454 79	11.99	673,725.96	609,061 29
4,881.33	88.00	89.93	4,625.00	913 50	0.56	461.12	461 12	11 99	673,725.96	609,067 62
4,900.00	88 00	89.93	4,625.65	914 15	0 59	479.77	479 77	0 00	673,725 99	609,086 27
5,000.00	88 00	89.93	4,629.14	917 64	0.71	579 71	579 71	0.00	673,726 11	609,186.21
5,100.00	88 00	89.93	4,632 63	921.13	0.83	679.65	679.65	0 00	673,726.23	609,286.15
5,200.00	88 00	89.93	4,636.12	924 62	0 95	779 59	779.59	0 00	673,726 35	609,386.09
5,300.00	88 00	89.93	4,639.61	928.11	1 07	879 53	879 53	0.00	673,726.47	609,486 03
5,400.00	88.00	89.93	4,643 10	931.60	1.20	979.47	979 47	0.00	673,726.60	609,585.97
5,500 00	88 00	89 93	4,646.59	935 09	1 32	1,079.40	1,079 41	0.00	673,726 72	609,685 90

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #13
Project:	Eddy County(NAD27)	**TVD Reference:**	WELL @ 3711 50ft (19' KB)
Site:	Miranda Federal	**MD Reference:**	WELL @ 3711 50ft (19' KB)
Well:	#13	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	Midland Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
5,600 00	88.00	89 93	4,650.08	938.58	1.44	1,179 34	1,179.34	0.00	673,726.84	609,785.84
5,700.00	88.00	89.93	4,653 57	942 07	1.56	1,279 28	1,279.28	0.00	673,726 96	609,885.78
5,800.00	88.00	89.93	4,657.06	945.56	1 69	1,379.22	1,379.22	0.00	673,727 09	609,985.72
5,900.00	88 00	89.93	4,660.55	949.05	1.81	1,479 16	1,479.16	0.00	673,727.21	610,085.66
6,000 00	88.00	89.93	4,664 04	952 54	1 93	1,579 10	1,579.10	0.00	673,727.33	610,185.60
6,100 00	88 00	89 93	4,667.53	956 03	2.05	1,679.04	1,679.04	0.00	673,727.45	610,285.54
6,200 00	88 00	89.93	4,671.02	959.52	2 17	1,778 98	1,778 98	0 00	673,727.57	610,385.48
6,300.00	88.00	89 93	4,674.51	963 01	2 30	1,878 92	1,878.92	0 00	673,727 70	610,485 42
6,400.00	88.00	89.93	4,678.00	966 50	2.42	1,978.86	1,978.86	0.00	673,727.82	610,585.36
6,500 00	88 00	89 93	4,681.49	969 99	2 54	2,078 79	2,078 80	0 00	673,727 94	610,685 29
6,600.00	88.00	89.93	4,684.98	973 48	2 66	2,178.73	2,178 74	0.00	673,728.06	610,785.23
6,700.00	88.00	89 93	4,688.47	976.97	2 78	2,278 67	2,278 67	0 00	673,728 18	610,885 17
6,800 00	88 00	89.93	4,691 96	980.46	2.91	2,378 61	2,378 61	0 00	673,728 31	610,985 11
6,900.00	88 00	89 93	4,695.45	983 95	3 03	2,478 55	2,478.55	0.00	673,728.43	611,085.05
7,000.00	88.00	89 93	4,698.94	987.44	3 15	2,578 49	2,578.49	0 00	673,728.55	611,184.99
7,100.00	88 00	89.93	4,702 43	990.93	3.27	2,678 43	2,678 43	0 00	673,728 67	611,284.93
7,200.00	88.00	89 93	4,705 92	994 42	3 39	2,778 37	2,778 37	0.00	673,728 79	611,384 87
7,300 00	88 00	89.93	4,709 41	997.91	3 52	2,878 31	2,878 31	0 00	673,728 92	611,484.81
7,400.00	88.00	89.93	4,712 90	1,001.40	3 64	2,978.25	2,978 25	0 00	673,729 04	611,584 75
7,500 00	88 00	89.93	4,716 39	1,004.89	3 76	3,078.18	3,078 19	0 00	673,729 16	611,684 68
7,600 00	88.00	89.93	4,719.88	1,008.38	3.88	3,178.12	3,178.13	0 00	673,729 28	611,784 62
7,700.00	88 00	89.93	4,723 37	1,011.87	4.00	3,278.06	3,278.06	0.00	673,729 40	611,884.56
7,724 25	88.00	89 93	4,724 22	1,012 72	4.03	3,302.30	3,302.30	0.00	673,729.43	611,908 80
PBHL(MF#13)										

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #13
Project:	Eddy County(NAD27)	**TVD Reference:**	WELL @ 3711 50ft (19' KB)
Site:	Miranda Federal	**MD Reference:**	WELL @ 3711 50ft (19' KB)
Well:	#13	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	Midland Database

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
PBHL(MF#13) - plan hits target center - Point	0 00	0 00	4,725 00	3 90	3,302.30	673,729 300	611,908.800	32° 51' 5.888 N	103° 58' 8.125 W

Checked By: _____ Approved By: _____ Date: _____

CONCHO

PATHFINDER

Azimuths to Grid North
True North: -0.19°
Magnetic North: 7.74°

Magnetic Field
Strength: 49060.8snT
Dip Angle: 60.72°
Date: 08/03/2010
Model: IGRF2010

Project: Eddy County(NAD27)
Site: Miranda Federal
Well: #13
Wellbore: OH
Plan: Plan #1 (#13/OH)

WELL DETAILS: #13

Ground Elevation: 3692.50
RKB Elevation: WELL @ 3711.50ft (19' KB)
Rig Name: 19' KB

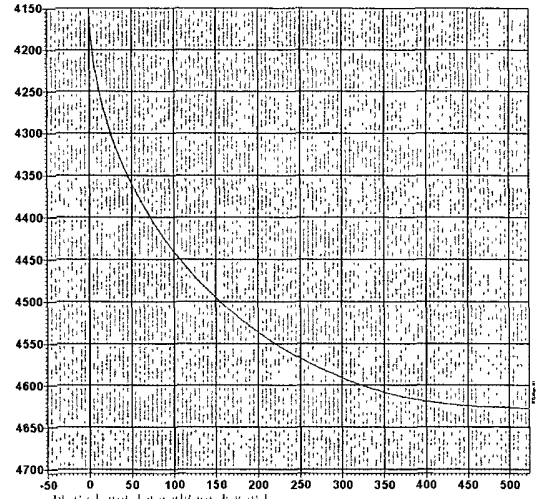
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	673725.400	608506.500	32° 51' 5.960 N	103° 58' 46.837 W	

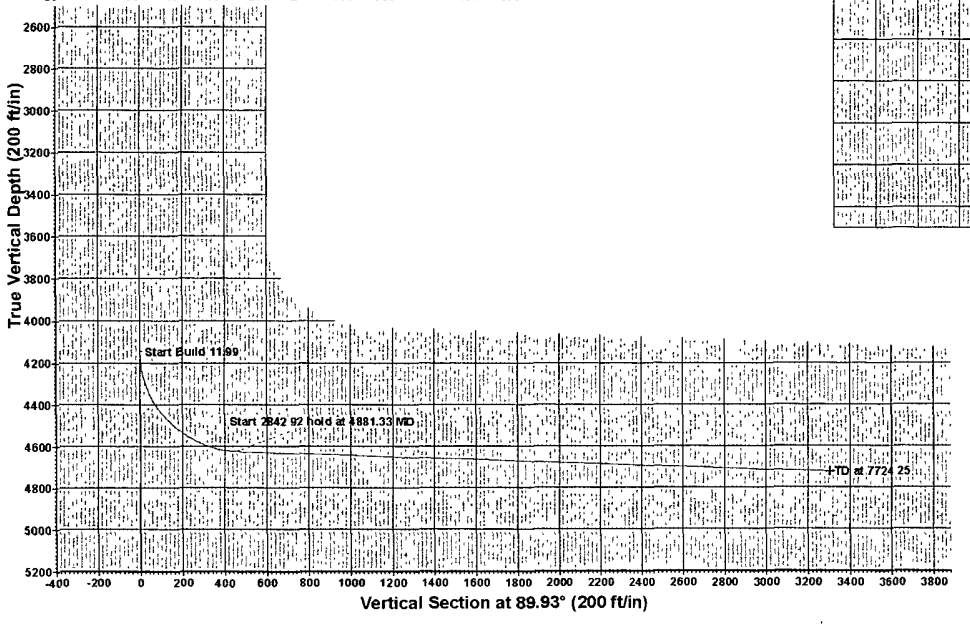
WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
PBHL(MF#13)	4724.00	3.90	3302.30	673729.300	611908.800	Point

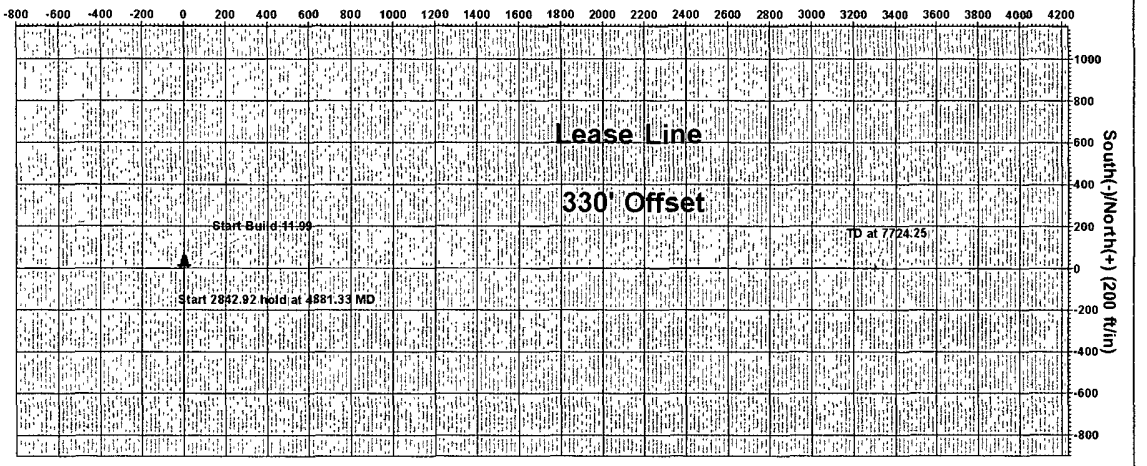
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	4147.50	0.00	0.00	4147.50	0.00	0.00	0.00	0.00	0.00	
3	4881.33	88.00	89.93	4625.00	0.56	461.12	11.99	89.93	461.12	
4	7724.25	88.00	89.93	4724.22	4.03	3302.30	0.00	0.00	3302.30	PBHL(MF#13)





West(-)/East(+) (200 ft/in)



PROJECT DETAILS: Eddy County(NAD27)

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
Local North:	Grid

Plan: Plan #1 (#13/OH)

Created By: Nate Bingham Date: 14:52, August 03 2010

Checked _____ Date _____

HORIZONTAL DRILLING PROGRAM

1. Geologic Name of Surface Formation

Quaternary

2. Estimated Tops of Important Geologic Markers:

Quaternary	Surface
Top of Salt	500'
Base of Salt	1000'
Yates	1250'
Seven Rivers	1475'
Queen	2150'
Grayburg	2550'
San Andres	2875'
Glorieta	4300'
Paddock	4400'
Blinebry	4800'

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

Water Sand	150'	Fresh Water
Grayburg	2550'	Oil/Gas
San Andres	2875'	Oil/Gas
Glorieta	4300'	Oil/Gas
Paddock	4400'	Oil/Gas
Blinebry	4800'	Oil/Gas

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to 400' and circulating cement back to the surface will protect the surface fresh water sand. The Salt Section will be protected by setting 9 5/8" casing to 1400' and circulating cement, in a single job 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 7" production casing back 200' into the intermediate casing to be run at 4700' (Note that this is set partially through the curve). A 4 1/2" liner will be run at TD (7830' MD, 4725 TVD), Uncemented, but with packers for separations. 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 the environment.

4. Casing Program

Hole Size	Interval	OD Casing	Weight	Grade	Jt., Condition	Jt.	burst/collapse/tension
17 ½"	0-400'	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.	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.

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
0-400'	Fresh Water	8.5	28	N.C.
400-4700'	Brine	10	30	N.C.
4700'-TD	Cut Brine	8.7-9.1	29	N.C.

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

8. Auxiliary Well Control and Monitoring Equipment

A. Kelly cock will be kept in the drill string at all times.

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

9. Logging, Testing and Coring Program

A. The electric logging program will consist of GR-Dual Laterolog, Spectral Density, Dual Spaced Neutron, CSNG Log and will be run from TD to 9 5/8" casing shoe.

B. Drill Stem test is not anticipated.

C. No conventional coring is anticipated.

D. Further testing procedures will be determined after the 4 ½" production liner has been run, 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 90 degrees and the estimated maximum bottom hold pressure is 1800 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.

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**COG Operating LLC**
LEASE NO.:	**NMLC-029342-D**
WELL NAME & NO.:	**Miranda Federal #13**
SURFACE HOLE FOOTAGE:	**1650' FNL & 1650' FWL**
BOTTOM HOLE FOOTAGE	**1650' FNL & 330' FEL**
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 lost circulation in the Grayburg and San Andres formations.
Possible water and brine flows in the Salado and Artesia Group.

1. The **13-3/8** inch surface casing shall be set at **approximately 425 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt)** and cemented to the surface. **If the salt is encountered set the casing 25 feet above the top of 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 which may be shallower than proposed.**

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.

4. The minimum required fill of cement behind the **4-1/2** inch production liner is:

   ☒ Cement not required – Packer system to be used. **100 foot overlap approved.**

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.

f. **Effective November 1, 2008, no variances will be granted on reduced pressure tests on the surface casing and BOP/BOPE. Onshore Order 2 requirements will be in effect.**

D. DRILL STEM TEST

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

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.

DHW 081010