

OCD-ARTESIA

ATS-10-277

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, 20075 Lease Serial No
NMLC-0029342D6 If Indian, Allottee or Tribe Name
N/A7 If Unit or CA Agreement, Name and No
N/A8 Lease Name and Well No
Miranda Federal #149 API Well No.
30-015- 3805110 Field and Pool, or Exploratory
Loco Hills; Glorieta-Yeso 96718

11 Sec, T R M or Blk and Survey or Area

Sec 9, T17S, R30E

12 County or Parish
Eddy13 State
NM1a Type of work ☒ DRILL ☐ REENTER1b Type of Well ☒ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone2 Name of Operator
COG Operating LLC3a Address
550 W. Texas, Suite 1300 Midland TX 797013b Phone No. (include area code)
(432) 685-4385

4. Location of Well (Report location clearly and in accordance with any State requirements *)

At surface SHL: 2528' FNL & 2309' FWL, UL F

At proposed prod zone BHL: 2310' FNL & 2310' FWL, UL F

14 Distance in miles and direction from nearest town or post office*

2 miles North of Loco Hills, NM

15 Distance from proposed*
location to nearest
property or lease line, ft
(Also to nearest drig unit line, if any)

2309'

16 No of acres in lease

240

17 Spacing Unit dedicated to this well

40

18 Distance from proposed location*
to nearest well, drilling, completed,
applied for, on this lease, ft

450'

19 Proposed Depth

6159' MD

20 BLM/BIA Bond No on file

NMB000215

21 Elevations (Show whether DF, KDB, RT, GL, etc)
3691.3' GL22 Approximate date work will start*
07/31/201023 Estimated duration
10 days

24. Attachments

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

1 Well plat certified by a registered surveyor

2 A Drilling Plan

3 A Surface Use Plan (if the location is on National Forest System Lands, the
SUPO shall be filed with the appropriate Forest Service Office)4 Bond to cover the operations unless covered by an existing bond on file (see
Item 20 above)

5 Operator certification

6 Such other site specific information and/or plans as may be required by the
authorized officer

25 Signature

Name (Printed/Typed)

Robyn M. Odum

Date

04/16/2010

Title

Regulatory Analyst

Approved by (Signature)

/s/ Don Peterson

Name (Printed/Typed)

/s/ Don Peterson

Date

JUL 20 2010

Title

FOR FIELD MANAGER

Office

CARLSBAD FIELD OFFICE

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to
conduct operations thereon
Conditions of approval, if any, are attached

APPROVAL FOR TWO YEARS

Title 18 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 APPROVALKZ APPROVAL SUBJECT TO
GENERAL REQUIREMENTS
AND SPECIAL STIPULATIONS
ATTACHED

NAD27 GEOGRAPHIC COORDINATES		NAD27 SPC - NM EAST	
LAT: 32.84924	LON -103.97753	X = 609268.8	Y = 672848.6

MASTER 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	1180'
Seven Rivers	1470'
Queen	2070'
Grayburg	2480'
San Andres	2780'
Glorietta	4220'
Yeso Group	4300'

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

Water Sand	150'	Fresh Water
Grayburg	2480'	Oil/Gas
San Andres	2780'	Oil/Gas
Glorietta	4220'	Oil/Gas
Yeso Group	4300'	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 425' 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 1300' 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, 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 the environment.

4. Casing Program

Hole Size	Interval	OD Casing	Weight	Grade	Jt., Condition	Jt.	brst/clps/ten
17 1/2"	0-425'	13 3/8"	48#	H-40orJ-55	ST&C/New	ST&C	9.22/3.943/15.8
11" or 12 1/4"	0-1300'	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

13 3/8" Surface Casing:

Class C, 450 sx, yield 1.32, back to surface

8 5/8" Intermediate Casing:

11" Hole:

Single Stage: 50:50:10, 300 sx lead, yield-2.45 + Class C, 200 sx tail, yield-1.32, back to surface.

Multi-Stage: Stage 1: Class C, 300 sx, yield-1.32 Stage 2: Class C, 200 sx, yield-2.45, back to surface. Multi stage tool to be set at approximately, depending on hole conditions, 425'

5 1/2" Production Casing:

Single Stage: 35:65:6, 500 sx Lead, yield-2.05 + 50:50:2, 400 sx Tail, yield-1.37, to 200' minimum tie back to intermediate casing.

Multi-Stage: Stage 1: 50:50:2, 400 sx, yield-1.37 Stage 2: 35:65:6, 500 sx, yield-2.05, to 200' minimum tie back to intermediate casing. Multi stage tool to be set at approximately, depending on hole conditions, TD - 2000'.

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 nipped up on the 13 3/8" surface casing with BOP equipment and tested ~~together to 1000 psi by rig pump in one test.~~ The BOP will then be nipped up on the 8 5/8" intermediate casing and tested by a third party to 2000 psi and used continuously until total depth is reached. All BOP's and accessory equipment will be tested to 2000 psi before drilling out of the intermediate casing. Pipe rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment (Exhibit #10) will include a Kelly cock and floor safety valve, choke lines and a choke manifold (Exhibit #11) with a 2000 psi WP rating.

*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
0-425'	Fresh Water	8.5	28	N.C.
425-1300'	Brine	10	30	N.C.
1300'-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 *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 8 5/8" casing shoe.
- B. Drill Stem test is not anticipated.
- C. No conventional coring is anticipated.
- D. Further testing procedures will be determined after the 5 1/2" production casing has been cemented at TD, based on drill shows and log evaluation.

10. Abnormal Conditions, Pressure, Temperatures and Potential Hazards

No abnormal pressures or temperatures are anticipated. The estimated bottom hole at TD is 110 degrees and the estimated maximum bottom hold pressure is 2300 psig. 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 12 days. If the well is productive, an additional 30 days will be required for completion and testing before a decision is made to install permanent facilities.



COG Operating LLC

Eddy County, NM (NAN27 NME)

Miranda Federal #14

Miranda Federal #14

OH

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

SHL = 2528' FNL & 2309' FWL

BHL = 2300' FNL & 2300' FWL

Top of Paddock = 2300' FNL & 2300' FWL @ 4400' TVD

Standard Planning Report

20 May, 2010





Scientific Drilling
Planning Report



Database	EDM 5000 1 Single User Db	Local Co-ordinate Reference	Site Miranda Federal #14
Company	COG Operating LLC	TVD Reference	GL Elev @ 3691 30ft
Project	Eddy County, NM (NAN27 NME)	MD Reference	GL Elev @ 3691 30ft
Site	Miranda Federal #14	North Reference	Grid
Well	Miranda Federal #14	Survey Calculation Method	Minimum Curvature
Wellbore	OH		
Design	Plan #1 - 7-7/8" Hole		

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 #14		
Site Position	Map	Northings	672,848 60 ft
From:		Easting	609,268 80 ft
Position Uncertainty	0 00 ft	Slot Radius:	0 "
		Grid Convergence:	0 19 °

Well	Miranda Federal #14		
Well Position	+N/-S	0 00 ft	Northings
	+E/-W	0 00 ft	Easting
Position Uncertainty	0 00 ft	Wellhead Elevation	Ground Level

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
	IGRF200510	2010/05/20	7 94
			60 74
			49,085

Design	Plan #1 - 7-7/8" Hole		
Audit Notes			
Version	Phase:	PLAN	Tie On Depth
Vertical Section	Depth From (TVD)	+N/-S	+E/-W
	(ft)	(ft)	(ft)
	0 00	0 00	0 00
			357 44

Plan Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(°/100ft)	(°/100ft)	(°/100ft)	(°)	
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
1,450 00	0 00	0 00	1,450 00	0 00	0 00	0 00	0 00	0 00	0 00	
1,690 55	4 81	357 44	1,690 26	10 08	-0 45	2 00	2 00	0 00	357 44	
4,168 75	4 81	357 44	4,159 74	217 72	-9 75	0 00	0 00	0 00	0 00	
4,409 30	0 00	0 01	4,400 00	227 80	-10 20	2 00	-2 00	0 00	180 00	TG1-MF #14
6,159 30	0 00	0 01	6,150 00	227 80	-10 20	0 00	0 00	0 00	0 01	PBHL-MF #14



Scientific Drilling
Planning Report



Database:	EDM 5000 1 Single User Db.	Local Co-ordinate Reference:	Site Miranda Federal #14
Company:	COG Operating LLC	TVD Reference:	GL Elev @ 3691 30ft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 3691 30ft
Site:	Miranda Federal #14	North Reference:	Grid
Well:	Miranda Federal #14	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - 7-7/8" Hole		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
North HL-MF #14 - West HL-MF #14										
1,350 00	0 00	0 00	1,350 00	0 00	0 00	0 00	0 00	0 00	0 00	
8-5/8" Casing										
1,450 00	0 00	0 00	1,450 00	0 00	0 00	0 00	0 00	0 00	0 00	
KOP Start Build 2.00°/100'										
1,500 00	1 00	357 44	1,500 00	0 44	-0 02	0 44	2 00	2 00	0 00	
1,600 00	3 00	357 44	1,599 93	3 92	-0 18	3 93	2 00	2 00	0 00	
1,690 55	4 81	357 44	1,690 27	10 08	-0 45	10 09	2 00	2 00	0 00	
EOC Hold 4 81°										
1,700 00	4 81	357 44	1,699 68	10 87	-0 49	10 89	0 00	0 00	0 00	
1,800 00	4 81	357 44	1,799 33	19 25	-0 86	19 27	0 00	0 00	0 00	
1,900 00	4 81	357 44	1,898 98	27 63	-1 24	27 66	0 00	0 00	0 00	
2,000 00	4 81	357 44	1,998 63	36 01	-1 61	36 05	0 00	0 00	0 00	
2,100 00	4 81	357 44	2,098 27	44 39	-1 99	44 43	0 00	0 00	0 00	
2,200 00	4 81	357 44	2,197 92	52 77	-2 36	52 82	0 00	0 00	0 00	
2,300 00	4 81	357 44	2,297 57	61 15	-2 74	61 21	0 00	0 00	0 00	
2,400 00	4 81	357 44	2,397 22	69 52	-3 11	69 59	0 00	0 00	0 00	
2,500 00	4 81	357 44	2,496 87	77 90	-3 49	77 98	0 00	0 00	0 00	
2,600 00	4 81	357 44	2,596 51	86 28	-3 86	86 37	0 00	0 00	0 00	
2,700 00	4 81	357 44	2,696 16	94 66	-4 24	94 75	0 00	0 00	0 00	
2,800 00	4 81	357 44	2,795 81	103 04	-4 61	103 14	0 00	0 00	0 00	
2,900 00	4 81	357 44	2,895 46	111 42	-4 99	111 53	0 00	0 00	0 00	
3,000 00	4 81	357 44	2,995 10	119 79	-5 36	119 91	0 00	0 00	0 00	
3,100 00	4 81	357 44	3,094 75	128 17	-5 74	128 30	0 00	0 00	0 00	
3,200 00	4 81	357 44	3,194 40	136 55	-6 11	136 69	0 00	0 00	0 00	
3,300 00	4 81	357 44	3,294 05	144 93	-6 49	145 07	0 00	0 00	0 00	
3,400 00	4 81	357 44	3,393 69	153 31	-6 86	153 46	0 00	0 00	0 00	
3,500 00	4 81	357 44	3,493 34	161 69	-7 24	161 85	0 00	0 00	0 00	
3,600 00	4 81	357 44	3,592 99	170 06	-7 61	170 24	0 00	0 00	0 00	
3,700 00	4 81	357 44	3,692 64	178 44	-7 99	178 62	0 00	0 00	0 00	
3,800 00	4 81	357 44	3,792 29	186 82	-8 37	187 01	0 00	0 00	0 00	
3,900 00	4 81	357 44	3,891 93	195 20	-8 74	195 40	0 00	0 00	0 00	
4,000 00	4 81	357 44	3,991 58	203 58	-9 12	203 78	0 00	0 00	0 00	
4,100 00	4 81	357 44	4,091 23	211 96	-9 49	212 17	0 00	0 00	0 00	
4,168 75	4 81	357 44	4,159 74	217 72	-9 75	217 94	0 00	0 00	0 00	
Start DLS 2.00°/100'										
4,200 00	4 19	357 44	4,190 89	220 17	-9 86	220 39	2 00	-2 00	0 00	
4,300 00	2 19	357 44	4,290 73	225 72	-10 11	225 94	2 00	-2 00	0 00	
4,400 00	0 19	357 44	4,390 70	227 78	-10 20	228 01	2 00	-2 00	0 00	
4,409 30	0 00	357 44	4,400 00	227 80	-10 20	228 03	2 00	-2 00	0 00	
EOC Hold 3.27° - TG1-MF #14										
6,159 30	0 00	0 01	6,150 00	227 80	-10 20	228 03	0 00	0 00	0 00	
PBHL-MF #14										



Scientific Drilling
Planning Report



Database	EDM 5000 1- Single User Db	Local Co-ordinate Reference:	Site Miranda Federal #14
Company	COG Operating LLC	TVD Reference	GL Elev @ 3691' 30ft
Project	Eddy County INM (NAN27 NME)	MD Reference	GL Elev @ 3691' 30ft
Site	Miranda Federal #14	North Reference	Grid
Well:	Miranda Federal #14	Survey Calculation Method	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - 7-7/8" Hole		

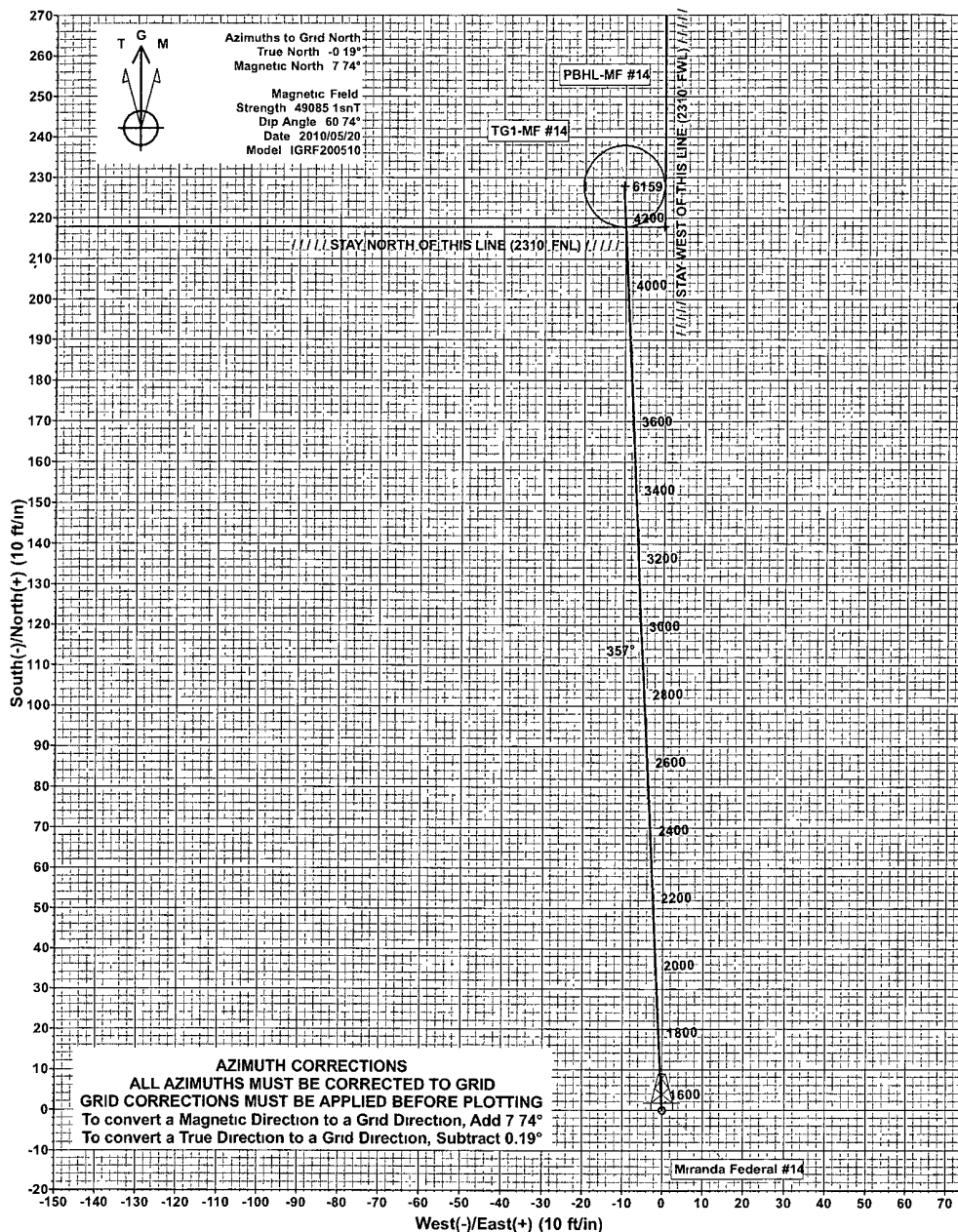
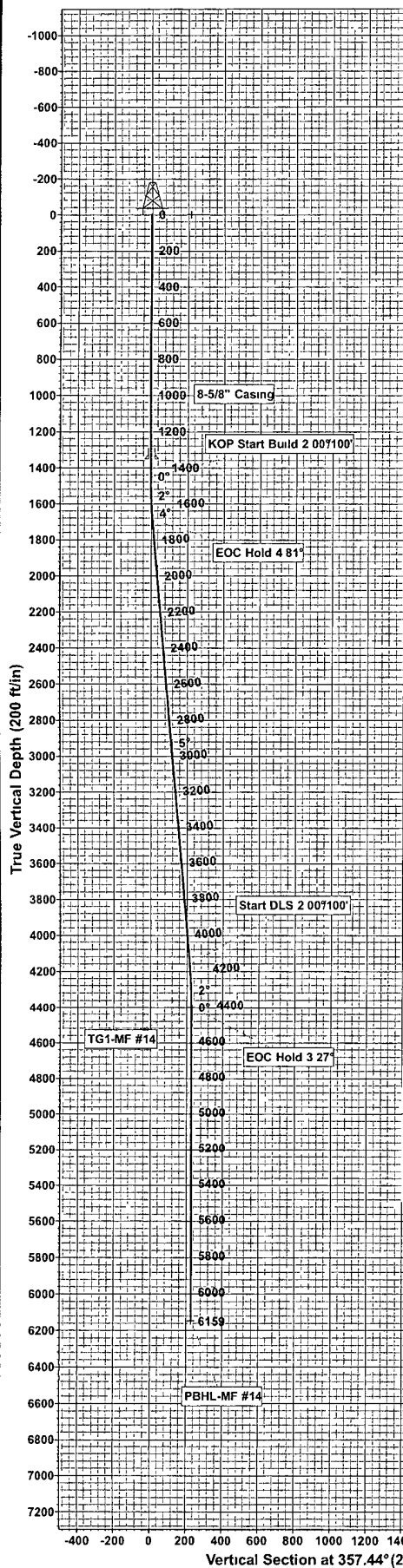
Design Targets									
Target Name	Dip Angle	Dip Dir	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
Shape									
North HL-MF #14	0 00	0 00	0 00	217 80	-0 20	673,066 40	609,268 60	32° 50' 59 417 N	103° 58' 39 101 W
- plan misses target center by 217 80ft at 0 00ft MD (0 00 TVD, 0 00 N, 0 00 E)									
- Rectangle (sides W200 00 H0 00 D0 00)									
West HL-MF #14	0 00	0 00	0 00	217 80	-0 20	673,066 40	609,268 60	32° 50' 59 417 N	103° 58' 39 101 W
- plan misses target center by 217 80ft at 0 00ft MD (0 00 TVD, 0 00 N, 0 00 E)									
- Rectangle (sides W0 00 H100 00 D0 00)									
TG1-MF #14	0 00	0 00	4,400 00	227 80	-10 20	673,076 40	609,258 60	32° 50' 59 517 N	103° 58' 39 218 W
- plan hits target center									
- Point									
PBHL-MF #14	0 00	0 01	6,150 00	227 80	-10 20	673,076 40	609,258 60	32° 50' 59 517 N	103° 58' 39 218 W
- plan hits target center									
- Circle (radius 10 00)									

Casing Points				
Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter
(ft)	(ft)		(")	(")
1,350 00	1,350 00	8-5/8" Casing	8-5/8	12-1/4

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S	+E/-W	
(ft)	(ft)	(ft)	(ft)	
1,450 00	1,450 00	0 00	0 00	KOP Start Build 2 00°/100'
1,690 55	1,690 27	10 08	-0 45	EOC Hold 4 81°
4,168 75	4,159 74	217 72	-9 75	Start DLS 2 00°/100'
4,409 30	4,400 00	227 80	-10 20	EOC Hold 3 27°



Scientific Drilling for COG Operating LLC
Site: Eddy County, NM (NAN27 NME)
Well: Miranda Federal #14
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	
North HL-MF #14	0 00	217 80	-0 20	673066 40	609268 60	32° 50' 59 417 N	103° 58' 39 101 W	Rectangle (Sides L0 00 W200 00)	
West HL-MF #14	0 00	217 80	-0 20	673066 40	609268 60	32° 50' 59 417 N	103° 58' 39 101 W	Rectangle (Sides L100 00 W0 00)	
TG1-MF #14	4400 00	227 80	-10 20	673076 40	609258 60	32° 50' 59 517 N	103° 58' 39 218 W	Point	
PBHL-MF #14	6150 00	227 80	-10 20	673076 40	609258 60	32° 50' 59 517 N	103° 58' 39 218 W	Circle (Radius 10 00)	

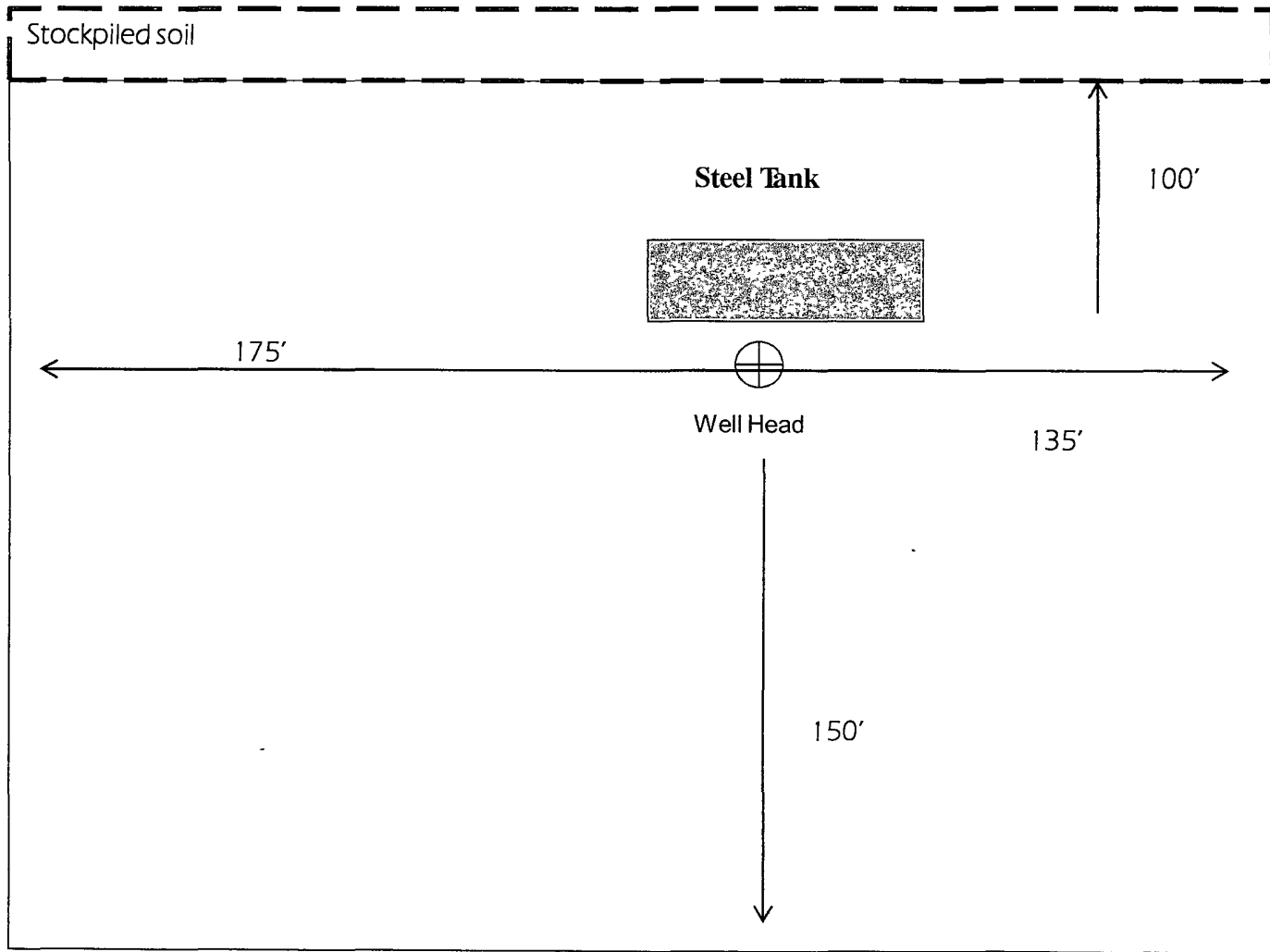
SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
2	1450 00	0 00	0 00	1450 00	0 00	0 00	0 00	0 00	0 00	
3	1690 55	4 81	357 44	1690 26	10 08	-0 45	2 00	357 44	10 09	
4	4168 75	4 81	357 44	4159 74	217 72	-9 75	0 00	0 00	217 94	
5	4409 30	0 00	0 00	4400 00	227 80	-10 20	2 00	180 00	228 03	TG1-MF #14
6	6159 30	0 00	0 00	6150 00	227 80	-10 20	0 00	0 00	228 03	PBHL-MF #14

WELL DETAILS Miranda Federal #14

+N/-S	+E/-W	Ground Level	3691 30
0 00	0 00	672848 60	609268 80
		32° 50' 57 262 N	103° 58' 39 108 W

PROJECT DETAILS Eddy County, NM (NAN27 NME) Plan Plan #1 - 7-7/8" Hole (Miranda Federal #14/OH)

Geodetic System	US State Plane 1927 (Exact solution)	Created By	Julio Pina	Date	20-May-10
Datum	NAD 1927 (NADCON CONUS)	Checked		Date	
Ellipsoid	Clarke 1866	Reviewed		Date	
Zone	New Mexico East 3001	Approved		Date	
System Datum	Mean Sea Level				



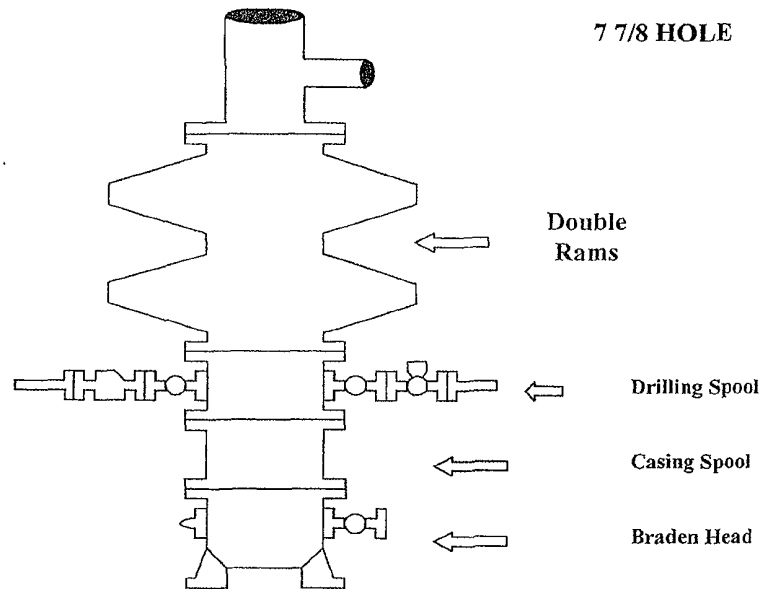
Not To Scale

COG OPERATING, LLC
Rig Layout Closed Loop
System

COG Operating LLC

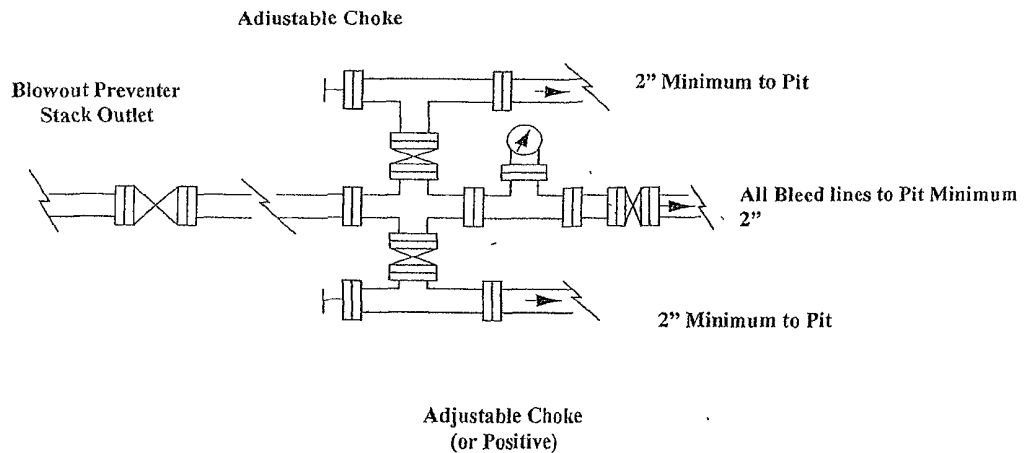
Exhibit #9

BOPE and Choke Schematic



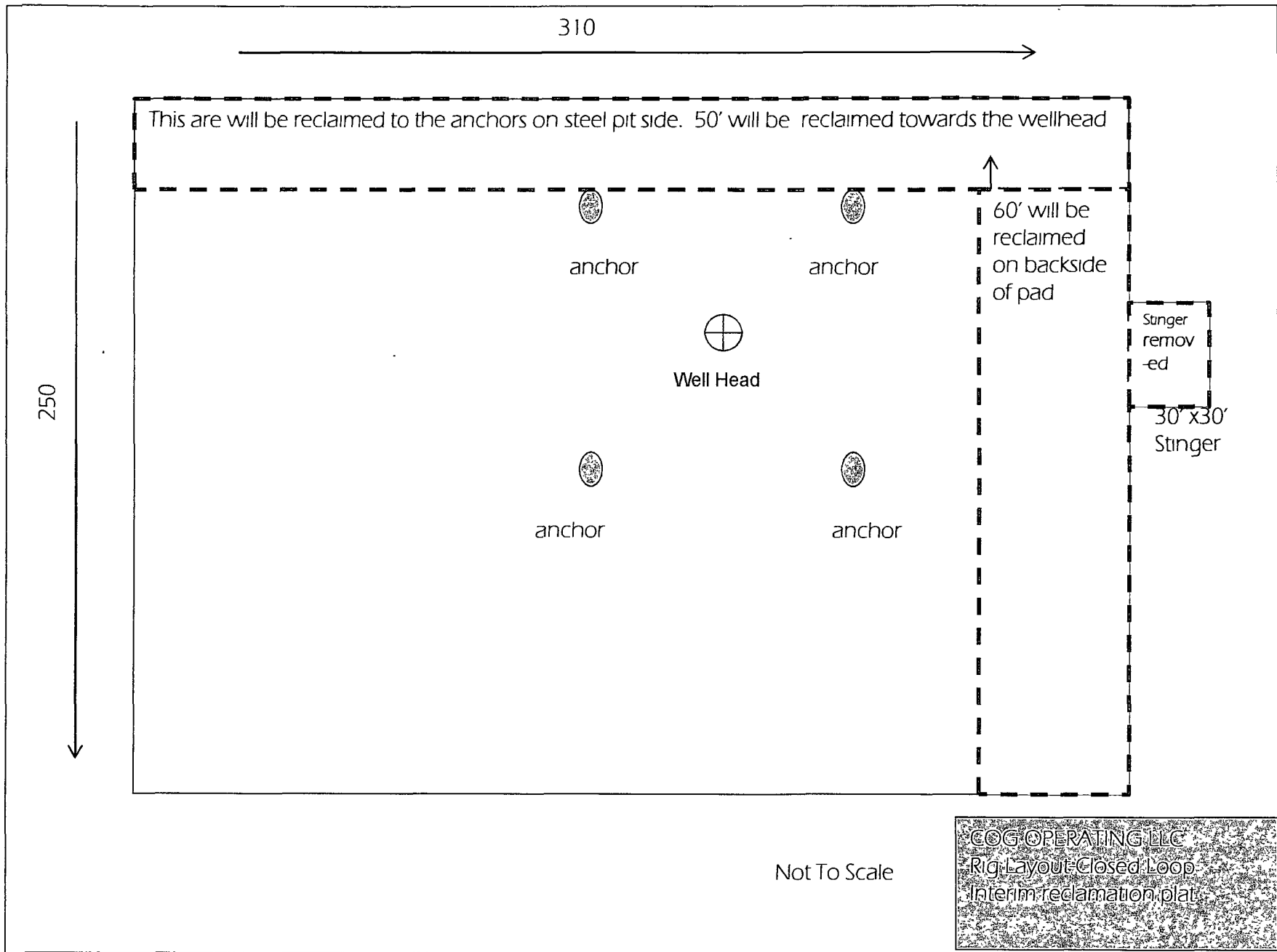
Minimum 4" Nominal choke and kill lines

Choke Manifold Requirement (2000 psi WP)
No Annular Required



NOTES REGARDING THE BLOWOUT PREVENTERS
Master Drilling Plan
Eddy County, New Mexico

1. Drilling nipple to be so constructed that it can be removed without use of a welder through rotary table opening, with minimum I.D. equal to preventer bore.
2. Wear ring to be properly installed in head.
3. Blow out preventer and all fittings must be in good condition, 2000 psi WP minimum.
4. All fittings to be flanged.
5. Safety valve must be available on rig floor at all times with proper connections, valve to be full 2000 psi WP minimum.
6. All choke and fill lines to be securely anchored especially ends of choke lines.
7. Equipment through which bit must pass shall be at least as large as the diameter of the casing being drilled through.
8. Kelly cock on Kelly.
9. Extension wrenches and hands wheels to be properly installed.
10. Blow out preventer control to be located as close to driller's position as feasible.
11. Blow out preventer closing equipment to include minimum 40-gallon accumulator, two independent sources of pump power on each closing unit installation all API specifications.



COG Operating LLC

Hydrogen Sulfide Drilling Operation Plan

I. HYDROGEN SULFIDE TRAINING

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

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

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

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

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

II. H2S SAFETY EQUIPMENT AND SYSTEMS

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

1. Well Control Equipment:

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

2. Protective equipment for essential personnel:

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

3. H2S detection and monitoring equipment:

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

4. Visual warning systems:

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

5. Mud program:

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

6. Metallurgy:

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

7. Communication:

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

8. Well testing:

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

EXHIBIT #7

WARNING
YOU ARE ENTERING AN H₂S
AUTHORIZED PERSONNEL ONLY

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

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

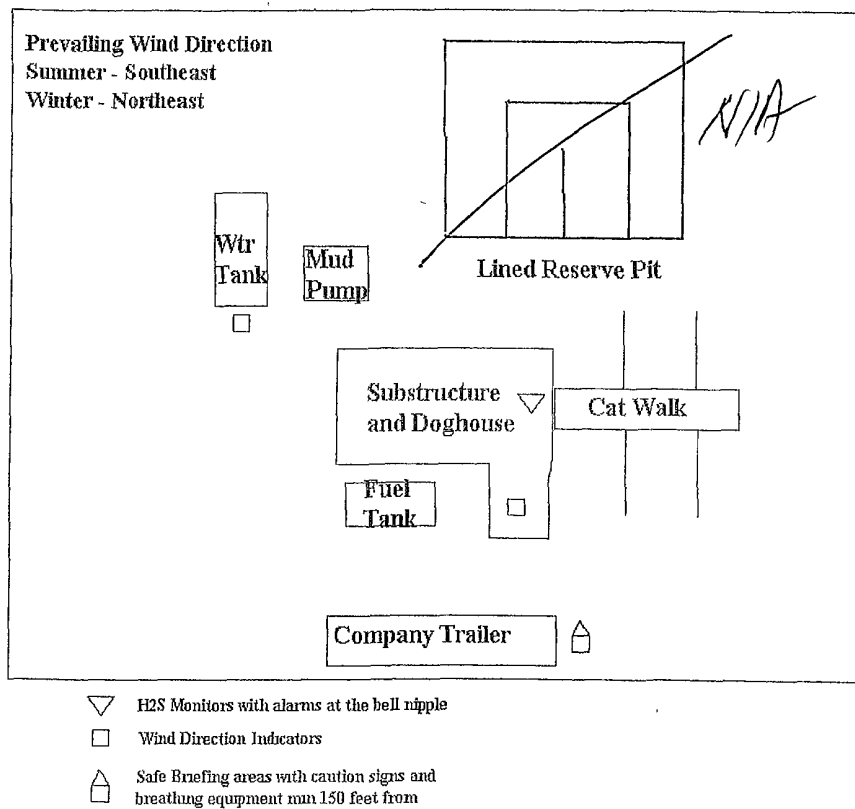
EDDY COUNTY EMERGENCY NUMBERS

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

LEA COUNTY EMERGENCY NUMBERS

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

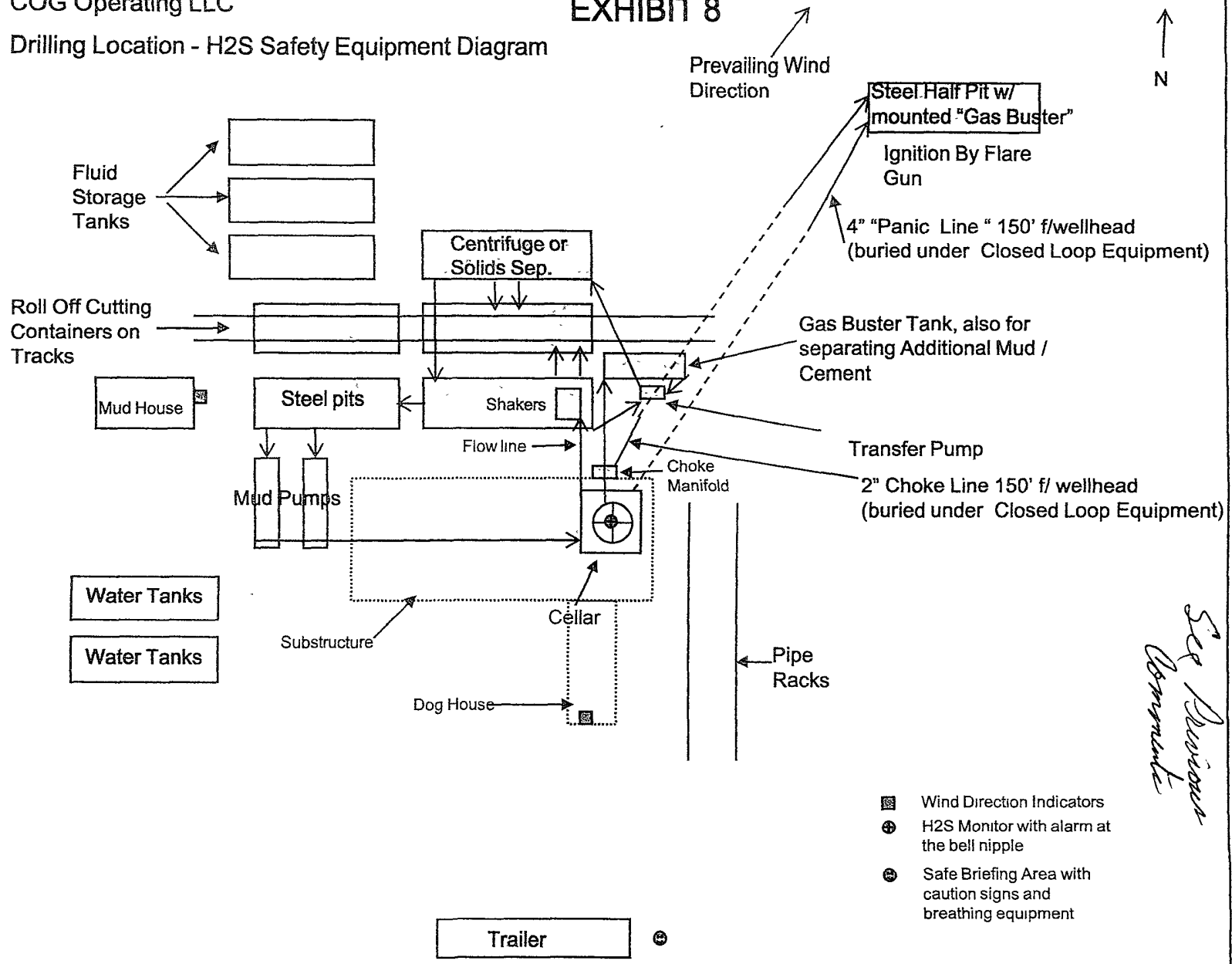
DRILLING LOCATION H₂S SAFETY EQUIPMENT Exhibit # 8



COG Operating LLC

Drilling Location - H2S Safety Equipment Diagram

EXHIBIT 8



SURFACE USE AND OPERATING PLAN

1. Existing & Proposed Access Roads

- A. The well site survey and elevation plat for the proposed well is shown in Exhibit #1. It was staked by Basin Surveys, Hobbs, NM.
- B. All roads to the location are shown in the topographic map Exhibit #2. The existing lease roads are illustrated and are adequate for travel during drilling and production operations. Upgrading existing roads prior to drilling the well will be done where necessary.
- C. Directions to Location From the intersection US Highway 82 and Co. Rd. 217 (Haggerman Cutoff Road) at Loco Hills, NM, 20.6 miles East of Artesia, NM. Then Go North on CR 217, 1.81 miles to a Lease Road on the Right. Then East on the Lease Road 0.48 mile to the intersection of CR 218 (Goat Ropers Road). Then North on CR 218. At 0.27 mile, pass the South line of the Miranda Federal Lease and a "T" intersection of a pipeline road. The Southwesterly on the pipeline road. 130 feet to the Southeast corner of the #14 well site. See Vicinity Map, Exhibit #3.
- D. Routine grading and maintenance of existing roads will be conducted as necessary to maintain their condition as long as any operations continue on this lease. Roads will be maintained according to specifications in section 2A of this Surface Use and Operating Plan.

2. Proposed Access Road:

Exhibit #4 shows that 0' of new access road will be required for this location. If any road is required it will be constructed as follows:

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

- E. Surfacing material will consist of native caliche. Caliche will be obtained from the actual well site if available. If not available onsite, caliche will be hauled from the nearest BLM caliche pit.

3. Location of Existing Well:

Exhibit #5 shows all existing wells within a one-mile radius of this well.

As shown on this plat there are numerous wells producing from the San Andres and Yeso formations.

4. Location of Existing and/or Proposed Facilities:

- A. COG Operating LLC does operate a production facility on this lease.
- B. If the well is productive, contemplated facilities will be as follows:
 - 1) Production will be sent to Miranda Federal Tank Battery located at the Miranda Federal # 1. The facility location is shown in Exhibit #5.
 - 2) The tank battery and facilities including all flow lines and piping will be installed according to API specifications.
 - 3) Any additional caliche will be obtained from the actual well site. If caliche does not exist or is not plentiful from the well site, the caliche will be hauled from a BLM approved caliche pit. Any additional construction materials will be purchased from contractors.
 - 4) Proposed flow lines, will follow an archaeologically approved route to the Miranda Federal Tank Battery located at the Miranda Federal # 1. The facility location is shown in Exhibit #5. The flowline will be SDR 7 3" poly line laid on the surface and will be approximately 1000' in length.
 - 5) It will be necessary to run electric power if this well is productive. Power will be provided by CVE and they will submit a separate plan and ROW for service to the well location.
 - 6) If the well is productive, rehabilitation plans will include the following:
 - a) The original topsoil from the well site will be returned to the location, and the site will be re-contoured as close as possible to the original site.

5. Location and Type of Water Supply:

The well will be drilled with combination brine and fresh water mud system as outlined in the drilling program. The water will be obtained from commercial water stations in the area and hauled to location by transport truck over the existing and proposed access roads shown in Exhibit #2. If a commercial fresh water source is nearby, fast line may be laid along existing road ROW's and fresh water pumped to the well. No water well will be drilled on the location.

6. Source of Construction Materials and Location "Turn-Over" Procedure:

Obtaining caliche: The primary way of obtaining caliche to build locations and roads will be by "turning over" the location. This means, caliche will be obtained from the actual well sight. A caliche permit will be obtained from BLM prior to pushing up any caliche. 2400 cu. Yards is max amount of caliche needed for pad and roads. Amount will vary for each pad. The procedure below has been approved by BLM personnel:

- A. The top 6 inches of topsoil is pushed off and stockpiled along the side of the location.
- B. An approximate 120' X 120' area is used within the proposed well site to remove caliche.
- C. Subsoil is removed and piled along side the 120' by 120' area within the pad site.
- D. When caliche is found, material will be stock piled within the pad site to build the location and road.
- E. Then subsoil is pushed back in the hole and caliche is spread accordingly across entire location and road.
- F. Once well is drilled, the stock piled top soil will be used for interim reclamation and spread along areas where caliche is picked up and the location size is reduced. Neither caliche or subsoil will be stock piled outside of the well pad. Topsoil will be stockpiled along the edge of the pad as depicted in attached plat.

In the event that no caliche is found onsite, caliche will be hauled in from a BLM approved caliche pit.

7. Methods of Handling Water Disposal:

- A. The well will be drilled utilizing a closed loop mud system. Drill cuttings will be held in roll-off style mud boxes and taken to an NMOC approved disposal site.
- B. Drilling fluids will be contained in steel mud pits.

- C. Water produced from the well during completion will be held temporarily in steel tanks and then taken to an NMOC approved commercial disposal facility.
- D. Garbage and trash produced during drilling or completion operations will be collected in a trash bin and hauled to an approved landfill. No toxic waste or hazardous chemicals will be produced by this operation.
- E. After the rig is moved out and the well is either completed or abandoned, all waste materials will be cleaned up within 30 days. In the event of a dry hole only a dry hole marker will remain.

8. Ancillary Facilities:

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

9. Well Site Layout:

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

10. Plans for Restoration of the Surface:

- A. Interim Reclamation will take place after the well has been completed. The pad will be downsized by reclaiming the areas not needed for production operations. The portions of the pad that are not needed for production operations will be recontoured to its original state as much as possible. The caliche that is removed will be reused to either build another pad site or for road repairs within the lease. The stockpiled topsoil will then be spread out reclaimed area and reseeded with a BLM approved seed mixture. In the event that the well must be worked over or maintained, it may be necessary to drive, park, and/or operate machinery on reclaimed land. This area will be repaired or reclaimed after work is complete. Pad will be approx. 200'X250' when reclaimed.

- B. Final Reclamation: Upon plugging and abandoning the well, All caliche for well pad and lease road will be removed and surface will be recountoured to reflect its surroundings as much as possible. Caliche will be recycled for road repair or reused for another well pad within the lease. If any topsoil remains, it will be spread out and the area will be re-seeded with a BLM approved mixture and revegetated as per BLM orders.

11.Surface Ownership:

- A. The surface is owned by the U.S. Government and is administered by the Bureau of Land Management. The surface is multiple uses with the primary uses of the region for grazing of livestock and the production of oil and gas.
- B. The surface tenant for this site is Charles Martin, P.O. Box 706, Artesia NM 88211.
- C. The proposed road routes and surface location will be restored as directed by the BLM

12.Other Information:

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

Surface Use Plan
COG Operating, LLC
Miranda Federal #14
SHL 2528' FNL & 2309' FWL BHL 2310' FNL & 2310' FWL
Section 9, T-17-S, R-30-E, UL F
Eddy County, New Mexico

13. Bond Coverage:

Bond Coverage is Nationwide Bond # 000215

14. Lessee's and Operator's Representative:

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

John Coffman,	Erick Nelson.
Drilling Superintendent	Division Operations Manager
COG Operating LLC	COG Operating LLC
550 W. Texas, Suite 1300	550 W. Texas, Suite 1300
Midland, TX 79701	Midland, TX 79701
Phone (432) 683-7443 (office)	Phone (505) 746-2210 (office)
(432) 631-9762 (cell)	(432) 238-7591 (cell)

Surface Use Plan
COG Operating, LLC
Miranda Federal #14
SHL 2528' FNL & 2309' FWL BHL 2310' FNL & 2310' FWL
Section 9, T-17-S, R-30-E, UL F
Eddy County, New Mexico

I hereby certify that I, or persons under my direct supervision, have inspected the drill site and access road proposed herein; that I am familiar with the conditions that presently exist; that I have full knowledge of State and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or COG Operating, LLC, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements. Executed this 15th day of April, 2010.

Signed: Carl Bird

Printed Name: Carl Bird

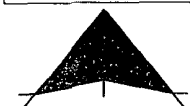
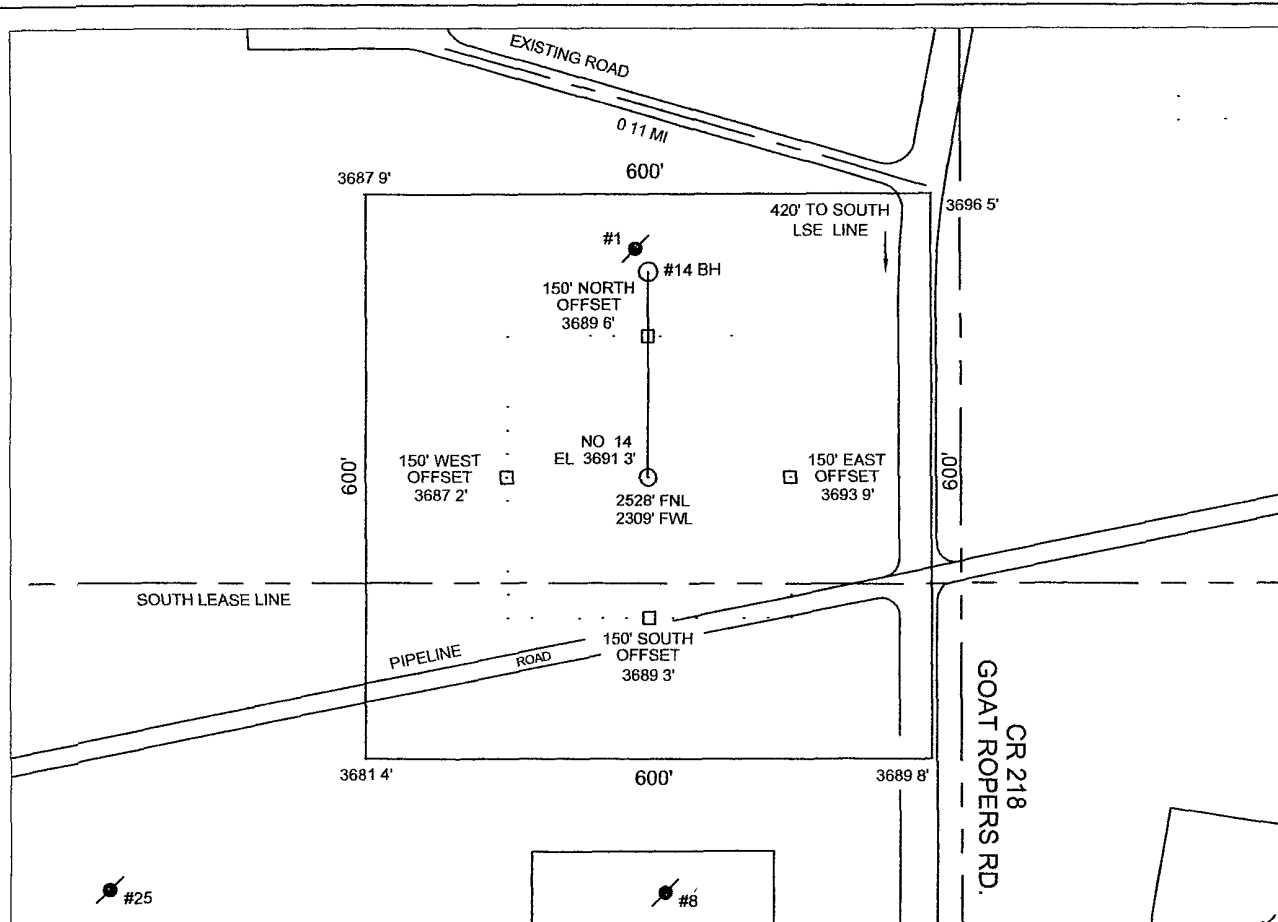
Position: Drilling Engineer

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

Telephone: (432) 683-7443

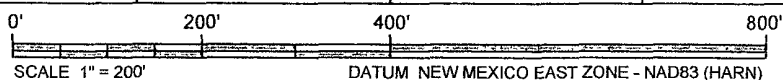
Field Representative (if not above signatory): Same

E-mail: cbird@conchoresources.com



DIRECTIONS TO LOCATION

NAD27 GEOGRAPHIC COORDINATES		NAD83 GEOGRAPHIC COORDINATES	
LAT 32 84924	LON -103.97753	LAT: 32°50'57.680" N.	LON 103°58'40.937" W



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, 0 27 MILES TO THE SOUTH LINE OF THE MIRANDA FEDERAL LEASE AND A "T" INTERSECTION OF A PIPELINE ROAD,
5. THEN SOUTHWESTERLY ON THE PIPELINE ROAD, 130' TO THE SOUTHEAST CORNER OF THE NO 14 WELL SITE

AEF 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

COG OPERATING LLC
 MIRANDA FEDERAL NO. 14
 SECTION 9 - TOWNSHIP 17 S - RANGE 30 E
 EDDY COUNTY, NM
 N 88 E - 24 7 MILES FROM ARTESIA, NM

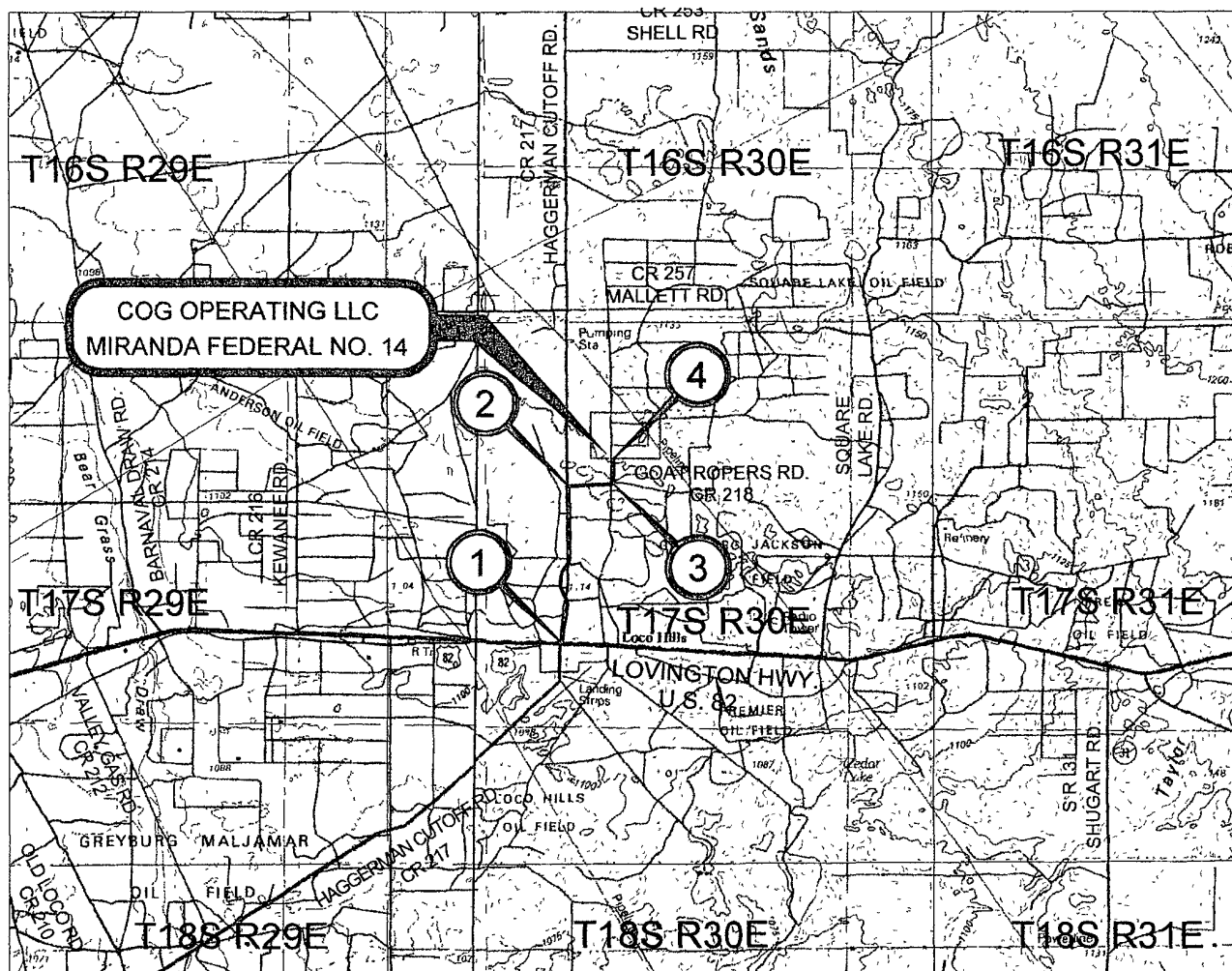
DATE: 03/10/2010

USGS
 QUAD LOCO HILLS

www.aefuller.com

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

LAT 32 84924

LON -103 97753

NAD27 SPC - NM EAST

X = 609268 8

Y = 672848 6



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
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

VICINITY MAP

COG OPERATING LLC

MIRANDA FEDERAL NO. 14

SECTION 9 - TOWNSHIP 17 S - RANGE 30 E

EDDY COUNTY, NM

N 88 E - 24.7 MILES FROM ARTESIA, NM

DATE: 03/10/2010

USGS
QUAD LOCO HILLS



A. E. FULLER & ASSOCIATES
LAND SURVEYORS

AL FULLER

Cell - (432) 559-6718

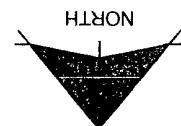
Email - al@ae fuller.com

Fax: (817) 594-8437

3600 W Baumann
Midland, TX 79703

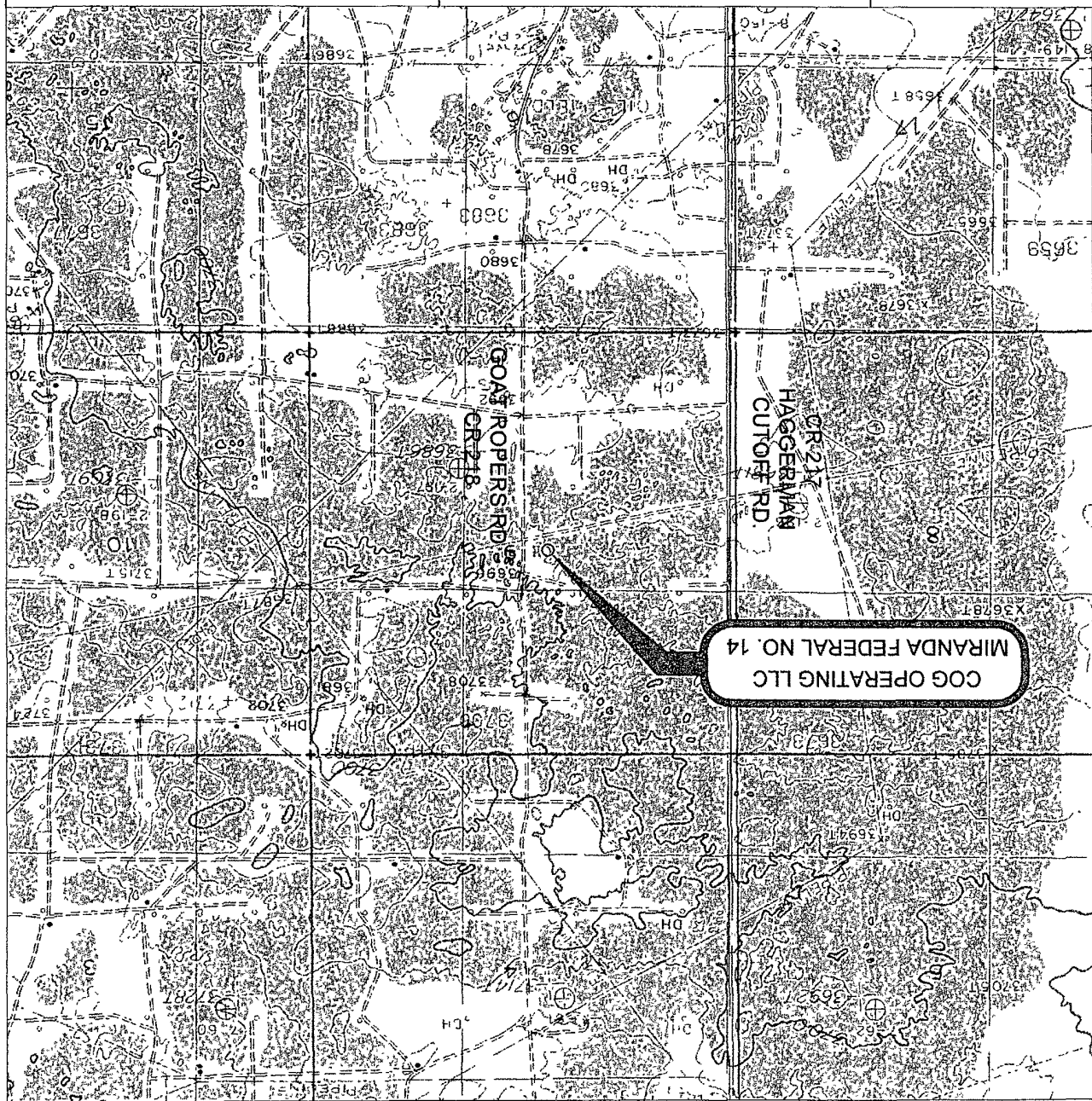
www.aefuller.com

TOPOGRAPHIC MAP
COG OPERATING LLC
MIRANDA FEDERAL NO 14
SECTION 9 - TOWNSHIP 17 S - RANGE 30 E
EDDY COUNTY, NM
N 88 E - 24 7 MILES FROM ARTESIA, NM
USGS QUAD LOCO HILLS
DATE: 03/10/2010



0 MI 1/2 SCALE 1" = 2000' 1 1/2 2 MILES
DATUM NEW MEXICO EAST ZONE - NAD83 (HARN)

LAT 32 84924	LON -103.97753	X = 609268.8	Y = 672848.6
NAD27 GEOGRAPHIC COORDINATES		NAD27 SPC - NM EAST	





NAD27 GEOGRAPHIC COORDINATES

LAT 32.84924

LOX -103.97753

NAD27 SPC - NM EAST

X = 609268.8

Y = 672848.6

0 MI.

1/4

SCALE 1" = 1000'

3/4

1 MILE

DATUM NEW MEXICO EAST ZONE - NAD83 (HARN)



A. E. FULLER & ASSOCIATES
LAND SURVEYORS

AL FULLER

Cell - (432) 559-6718

Email - al@aefuller.com

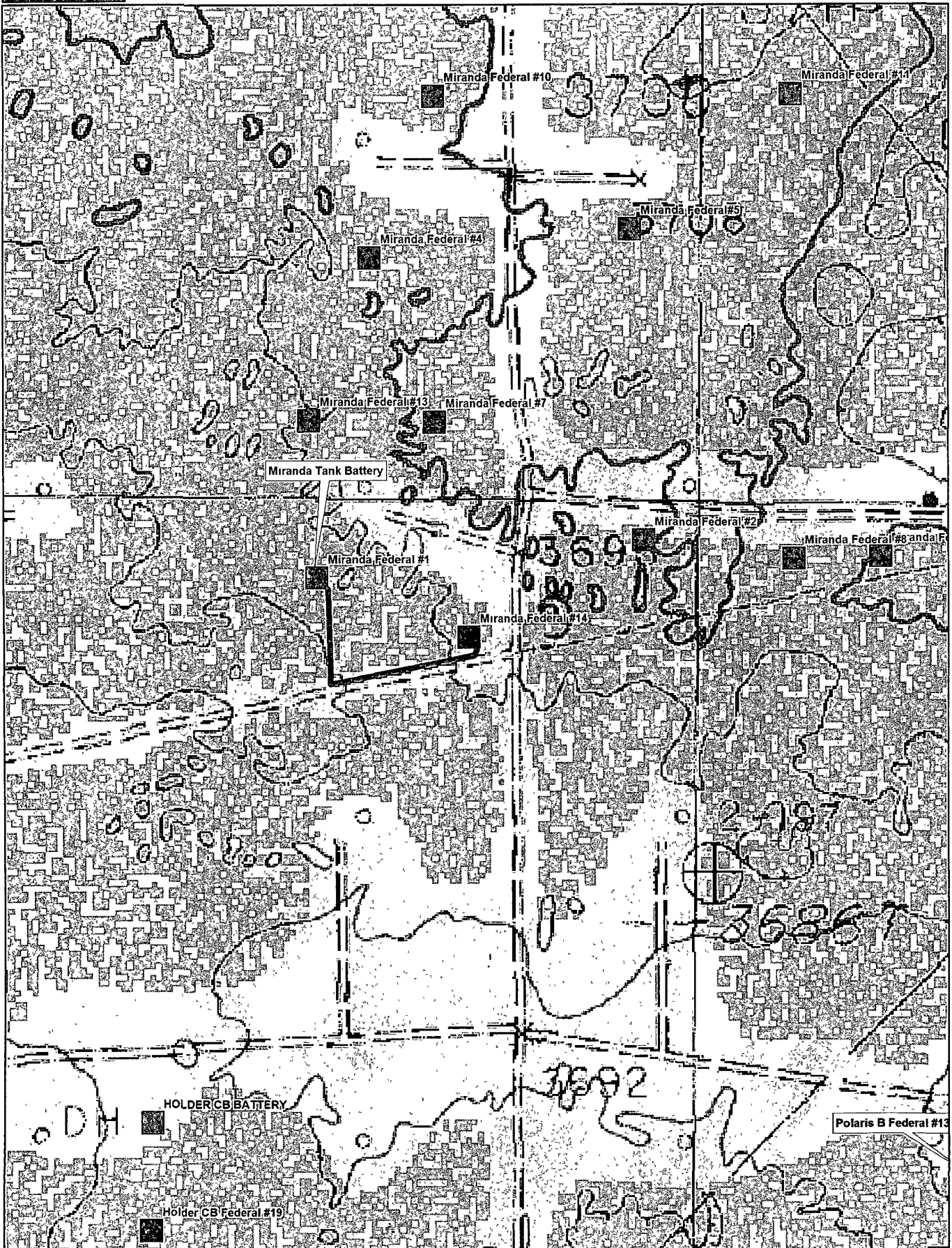
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EDDY COUNTY, NM
N 88 E - 24 7 MILES FROM ARTESIA, NM

DATE: 03/10/2010

USGS
QUAD LOCO HILLS



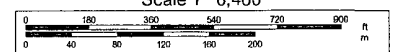
Data use subject to license

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Scale 1 6,400



1" = 533.3 ft

Data Zoom 15-0

PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Operating
LEASE NO.:	LC-029342D
WELL NAME & NO.:	14 Miranda Federal
SURFACE HOLE FOOTAGE:	2528' FNL & 2309' FWL
BOTTOM HOLE FOOTAGE	2310' FNL & 2310' FWL
LOCATION:	Section 09, T. 17 S., R. 30 E., NMPM
COUNTY:	Eddy County, New Mexico

TABLE OF CONTENTS

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

- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☒ **Special Requirements**
 - Lesser Prairie-Chicken Timing Stipulations
 - Ground-level Abandoned Well Marker
- ☐ **Construction**
 - Notification
 - V-Door Direction
 - Topsoil
 - Closed Loop System
 - Federal Mineral Material Pits
 - Well Pads
 - Roads
- ☐ **Road Section Diagram**
- ☒ **Drilling**
 - H2S Requirements-Onshore Order #6
 - Logging Requirements
- ☐ **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)

Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken:

Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period.

Additionally, no new drilling will be allowed within up to 200 meters of leaks known at the time of permitting. Normal vehicle use on existing roads will not be restricted.

Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 feet from the source of the noise.

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

VI. CONSTRUCTION

A. NOTIFICATION

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

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

B. V-DOOR DIRECTION: east

C. 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 6 inches in depth. The topsoil will be used for interim and final reclamation.

D. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

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

E. 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.

F. 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.

G. ON LEASE ACCESS ROADS

Road Width

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

Surfacing

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

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

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

Crowning

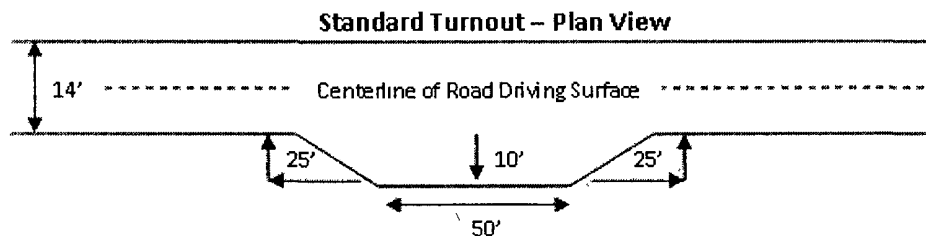
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching

Ditching shall be required on both sides of the road.

Turnouts

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

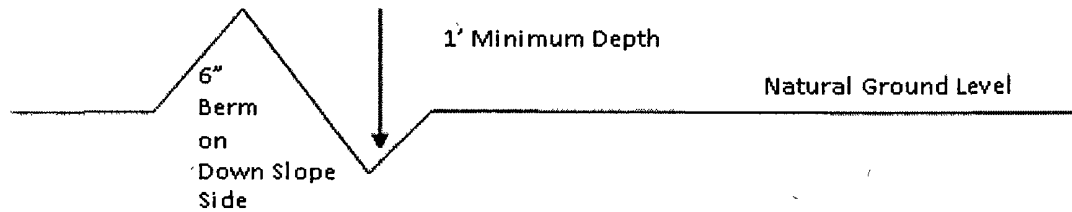


Drainage

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

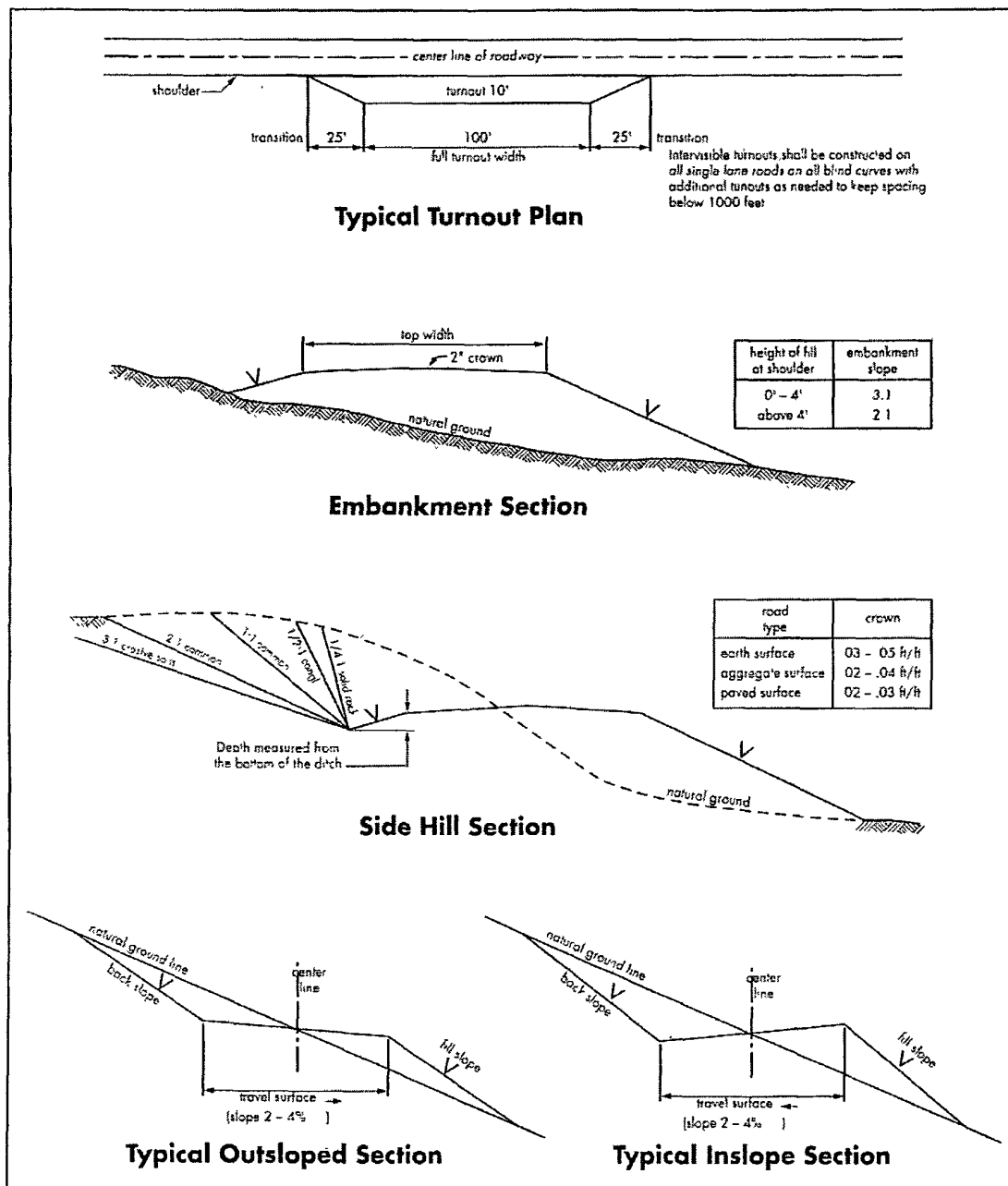
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

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

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

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

1. The 13-3/8 inch surface casing shall be set 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 a 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.**

If used, DV tool is to be set 50 feet below previous casing shoe. Operator is to submit sundry if DV tool depth varies by more than 100' from approved depth.

a. First stage to DV tool, cement shall:

- ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job.

b. Second stage above DV tool, cement shall:

- ☒ 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:

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

DV tool option: Operator is to submit sundry if DV tool depth varies by more than 100' from approved depth.

a. First stage to DV tool, cement shall:

- ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. **Additional cement may be required as the excess cement calculates to be -25%.**

b. Second stage above DV tool, cement shall:

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

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

C. PRESSURE CONTROL

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

2. 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. Casing cut-off and BOP installation will not be initiated until the cement has had a minimum of 8 hours setup time for a water basin. The casing shall remain stationary and under pressure for at least eight hours after the operator places the cement. In the potash area, the minimum time is 12 hours and the casing shall remain stationary and under pressure during this time period. In addition, for the potash area, no tests are to be initiated prior to 24 hours (R-111-P regulations). Casing shall be under pressure if the operator uses some acceptable means of holding pressure or if the operator employs one or more float valves to hold the cement in place. Testing the BOP/BOPE against a plug can commence after meeting the above conditions plus the BOP installation time.
 - b. The tests shall be done by an independent service company utilizing a test plug.
 - 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.

CRW 070710

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

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

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

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

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

- a. Activities of the holder including, but not limited to construction, operation, maintenance, and termination of the facility.
- b. Activities of other parties including, but not limited to:
 - (1) Land clearing.
 - (2) Earth-disturbing and earth-moving work.
 - (3) Blasting.
 - (4) Vandalism and sabotage.
- c. Acts of God.

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

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

5. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil, salt water, or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil, salt water, or other pollutant, wherever found, shall be the responsibility of the holder, regardless of fault. Upon failure of the holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including, where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve the holder

of any responsibility as provided herein.

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

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

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

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

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

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

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

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

14. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

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

(March 1989)

C. ELECTRIC LINES

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).

In order to improve the probability of maintaining a stable lesser prairie-chicken population low profile plugged and abandoned well markers will be installed. The well marker will be approximately 2 inches above ground level and contain the following information: operator name, lease name, and well number and location, including unit letter, section, township, and range. The previous listed information will be welded, stamped, or otherwise permanently engraved into the metal of the marker.

Seed Mixture for LPC Sand/Shinnery Sites

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

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

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

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

**Four-winged Saltbush 5lbs/A

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

*Pounds of pure live seed:

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