FORM APPROVED Form 3160-3 OMB No 1004-0137 Expires March 31, 2007 (April 2004) UNITED STATES OCD Artesia 5. Lease Serial No. NMLC-0028784A DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT 6. If Indian, Allotee or Tribe Name APPLICATION FOR PERMIT TO DRILL OR REENTER 7 If Unit or CA Agreement, Name and No. **✓** DRILL REENTER la. Type of work: NMNM-88525X; Burch Keely Unit 8 Lease Name and Well No. Multiple Zone Gas Well Single Zone lb. Type of Well: ✓ Oil Well **BURCH KEELY UNIT #617** 9 API Well No. Name of Operator COG Operating LLC 30-015 3b. Phone No. (include 10. Field and Pool, or Exploratory 3a. Address 550 W. Texas Ave., Suite 100 Midland, TX 79701 432-685-4385 Burch Keely; Glorieta-Upper Yeso 11. Sec., T. R. M. or Blk, and Survey or Area Location of Well (Report location clearly and in accordance with any State requirements*) 10' FNL & 1980' FEL, Unit B Sec 24 T17S R29E At proposed prod zone 12. County or Parish 13. State 14. Distance in miles and direction from nearest town or post office* EDDY 2 miles from Loco Hills, NM NM 15 Distance from proposed* 16. No of acres in lease 17. Spacing Unit dedicated to this well location to nearest property or lease line, ft (Also to nearest drig, unit line, if any) 10 20. BLM/BIA Bond No on file 19. Proposed Depth 18. Distance from proposed location* to nearest well, drilling, completed, 614' 4800 NMB000215;-NMB000740 applied for, on this lease, ft 22 Approximate date work will start* 23. Estimated duration Elevations (Show whether DF, KDB, RT, GL, etc.) 3618' GL 15 days 09/30/2012 24 Attachments The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, shall be attached to this form: Bond to cover the operations unless covered by an existing bond on file (see 1 Well plat certified by a registered surveyor. Item 20 above). 2 A Drilling Plan. 3. A Surface Use Plan (if the location is on National Forest System Lands, the Operator certification SUPO shall be filed with the appropriate Forest Service Office). Such other site specific information and/or plans as may be required by the authorized officer Name (Printed/Typed) Date 25. Signature Kelly J. Holly 07/16/2012 Title **Permitting Tech** Approved by (Signature)

/s/ Don Peterson Title

(of FIELD MANAGER

Name (Printed/Typed)

/s/ Don Peterson

SEP

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.

Office

Conditions of approval, if any, are attached.

APPROVAL FOR TWO YEARS

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)

Roswell Controlled Water Basin

SEP 14 2012

NMOCD ARTESIA

Approval Subject to General Requirements & Special Stipulations Attached

SEE ATTACHED FOR CONDITIONS OF APPROVAL Surface Use Plan COG Operating, LLC Burch Keely Unit #617 SL: 10' FNL & 1980' FEL Section 24, T-17-S, R-30-E Eddy County, New Mexico

 $\dot{U}LB$

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 2nd day of July, 2012.

Signed:

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@concho.com

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone. (375) 393-6161 Fax (575) 393-0720
DISTRICT II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
DISTRICT III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax. (505) 476-3462

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

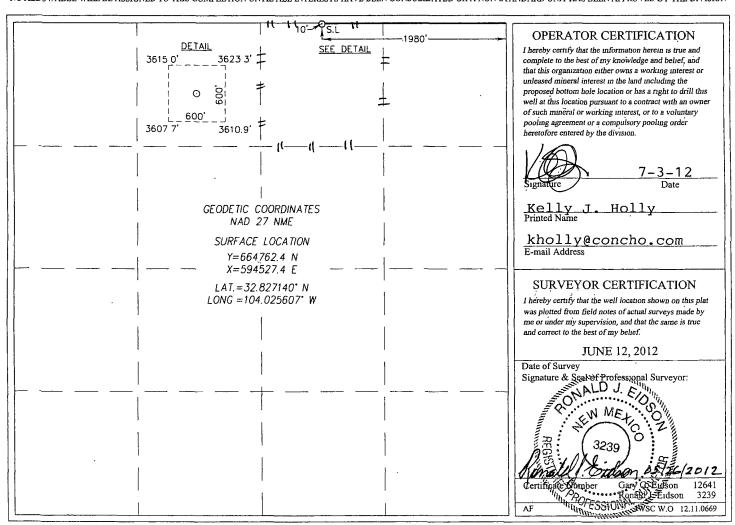
Form C-102 Revised August 1, 2011 Submit one copy to appropriate District Office

□ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number				Pool Code		Pool Name					
30-015	- 40	109		97918	Bur	Burch Keely: Glorieta-Upper Yeso					
Property Code					Property Nam	e ·		We	Well Number		
308086			BURCH KEELY UNIT					617			
OGRID No.			Operator Name					F	Elevation		
229137	229137				COG OPERATING, LLC				3618'		
					Surface Locat	ion					
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County		
В	24	17-S	29-E		10	NORTH	. 1980	EAST	EDDY		
		<u> </u>		Bottom Hole	e Location If Diffe	erent From Surface					
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County		
Dedicated Acres	Joint or	Infill Co	onsolidation C	Code Orde	er No.						

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



Use for Sections 6-30, T17S, R29E

Eddy County, NM

MASTER DRILLING PROGRAM

1. Geologic Name of Surface Formation

Quaternary

2. Estimated Tops of Important Geologic Markers:

Quaternary	Surface
Rustler	300'
Salt	360'
Base of Salt	780'
Yates	950'
Seven Rivers	1235'
Queen	1845'
Grayburg	2220'
San Andres	2540'
Glorieta	4000'
Paddock	4075'
Blinebry	4620'
Tubb	5520'

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

Water Sand .	150'	Fresh Water
Grayburg	2150'	Oil/Gas
San Andres	2450'	Oil/Gas
Glorieta	3900'	Oil/Gas
Paddock	4075'	Oil/Gas
Blinebry	4620'	Oil/Gas
Tubb	5520 [;]	Oil/Gas

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to 325 and circulating cement back to the surface will protect the surface fresh water sand. The Salt Section will be protected by setting 8 5/8" casing to 850' and circulating cement, in a single or multi-stage job and/or with an ECP, back to the surface. Any shallower zones above TD, which contain commercial quantities of oil and/or gas, will have cement circulated across them. This will be achieved by cementing, with a single or multi-stage job, the 5 1/2" production casing back 200' into the intermediate casing, (but calculated to surface) to be run at TD. If wellbore conditions arise that require immediate action and/or a change to this program, COG Operating LLC personnel will always react to protect the wellbore and/or environment.

COA

See

Eddy County, NM

4. 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
0-325' 265	Fresh Water	8.5	28	N.C.
325'-850'1025	Brine	10	30	N.C.
850'-TD'	Cut Brine	8.7-9.2	30	N.C.

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

5. Proposed Casing Program

	Hole Size	Interval	OD Casing	Weight	Grade	Jt., Condition	Jt.	brst/clps/ten
	17 ½"	0-325'265	13 3/8"	48#	H-40/J-55 Hybrid	ST&C/New	ST&C	9.22/3.943/15.8
I	11"	0-850'1025	8 5/8"	24or32#	J-55	ST&C/New	ST&C	3.03/2.029/7.82
Γ	7 7/8"	0-TD	5 1/2"	15.5or17#	J-55orL-80	LT&C/New	LT&C	1.88/1.731/2.42

6. **Cement Program**

13 3/8" SURFACE:

Lead: 0'-325' 400 sks Class "C" w/2% CaCl2 1.32 cf/sk

14.8 ppg

Circulate to surface

+ 0.25 pps CF

Excess 133.9%

8 5/8" INTERMEDIATE:

Option #1: Single Stage (Circulate to Surface)

Lead: 300 sks 50:50:10 C:Poz:Gel

2.45 cf/sk

11.8 ppg

0'-500'

w/ 5% Salt+ 0.25% CF

Excess 286.6%

Tail:

200 sks

Class C w/2% CaCl2

1.32 cf/sk

14.8 ppg

500'-850'

Excess 212.4%

Option #2: Multi-stage w/ DV Tool @ +/-375' (Circulate to Surface)

Stage #1:

200 sks

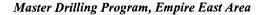
Class "C" w/2% CaCl2

1.32 cf/sk

14.8 ppg

375'-850'

Excess 95.6%



COG Operating LLC Master Drilling Plan

Burch Keely; Glorieta- Upper Yeso Use for Sections 6-30, T17S, R29E

Eddy County, NM

Stage #2

0'-375'

300 sks

50:50:10 C:Poz:Gel w/5%

2.45 cf/sk

2.05 cf/sk

1.37 cf/sk

1.37 cf/sk

11.8 ppg

salt+ 0.25% CF

Excess 365.2%

Note: Multi-stage tool to be set depending on hole conditions at approximately 375' (50' below the surface casing shoe). Cement volumes will be adjusted proportionately for depth changes of multi-stage tool.

5 ½" PRODUCTION CASING: Top of cement @650' (200' tie-back into 8 5/8" csg.):

Option #1: Single Stage

Lead:

500 sks

35:65:6 C:Poz Gel w/5%

12.5 ppg

650'-2000'

salt+ 5 pps LCM+ 0.2 %

(min.tie back 200')

SMS+ 1% FL-25+

(into inter, csg.) Excess 338.1%

1% BA-58+0.3% FL-52A+

0.125 pps CF

Tail:

400 sks

50:50:2 C:Poz Gel w/5%

14.0 ppg

2000'-TD

salt+ 3 nns I CM+

salt+ 3 pps LCM+ 0.6 %

Excess 22.6%

SMS+ 0.3% FL-52A+

0.125 pps CF+1% FL-25+

1% BA-58

Option #2: Multi-stage w/DV Tool @ +/-2500' Top of cement @ 650' (200' tie-back into 8 5/8" csg.)

Stage #1:

500 sks

50:50:2 C:Poz Gel w/5%

14.0 ppg

2500'-TD

salt+ 3 pps LCM+ 0.6 %

Excess 94.6%

SMS+ 0.3% FL-52A+

0.125 pps CF+1% FL-25+

1% BA-58

Stage #2:

Lead:

450 sks

50:50:2 C:Poz Gel w/5%

14.0 ppg

650'-1500'

salt+ 3 pps LCM+ 0.6 %

(min.tie back 200')

SMS+ 1% FL-25+ 1% BA-58

(into inter, csg.)

+0.3% FL-52A + 0.125 pps CF

Excess 316.9%

Tail:

250 sks

Class "C" w/0.3% R-3+

1.02 cf/sk

1.37 cf/sk

16.8 ppg

1500'-2500'

1.5% CD-32

Excess 47.4%

Note: Multi-stage tool to be set depending on hole conditions at approximately 2500' Cement volumes will be adjusted proportionately for depth changes of multi-stage tool.

7. Minimum Specifications for Pressure Control

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

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

COP

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

COG Operating LLC Master Drilling Plan Burch Keely; Glorieta- Upper Yeso Use for Sections 6-30, T17S, R29E Eddy County, NM



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

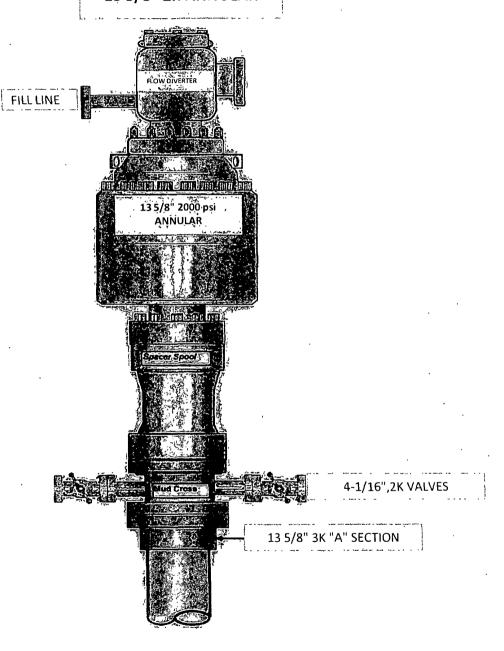
10. Abnormal Conditions, Pressure, Temperatures and Potential Hazards

No abnormal pressures or temperatures are anticipated. The estimated bottom hole at TD is 110 degrees and the estimated maximum bottom hole pressure is 2112 psig. Measurable gas volumes or Hydrogen Sulfide levels have not been encountered during drilling operations in this area, although a Hydrogen Sulfide Drilling Operation Plan is attached to this program. No major loss of circulation zones has been reported in offsetting wells.

11. Anticipated Starting Date and Duration of Operations

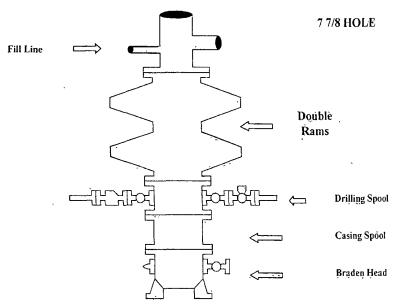
Road and location work will not begin until approval has been received from the BLM. As this is a Master Drilling plan, please refer to the Form 3160-3 for the anticipated start date. Once commenced, drilling operations should be finished in approximately 10 days. If the well is productive, an additional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

13 5/8" 2K ANNULAR



COG Operating LLC

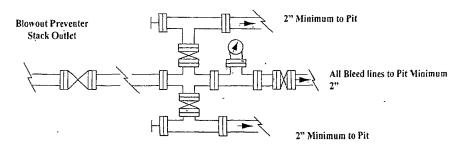
Exhibit #9 BOPE and Choke Schematic



Minimum 4" Nominal choke and kill lines

Choke Manifold Requirement (2000 psi WP) No Annular Required

Adiustable Choke

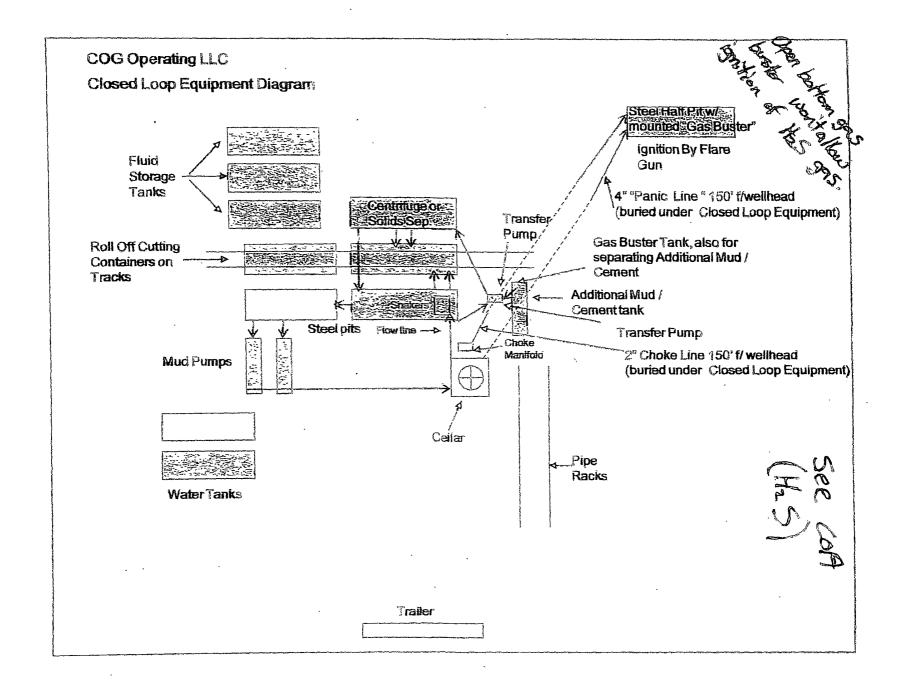


Adjustable Choke (or Positive)

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

- 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.
- 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.
- 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.

Blowout Preventers Page 2



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

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

- 1. The effects of H2S on metal components. If high tensile tubular are to be used, personnel well 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 2way 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

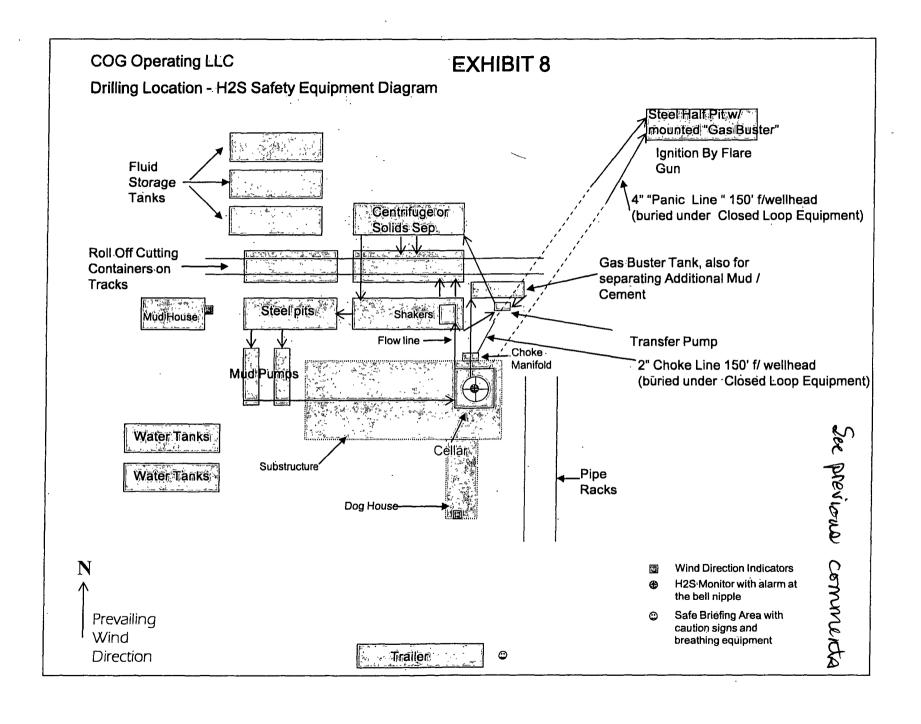
AUTHORIZED PERSONNEL ONLY

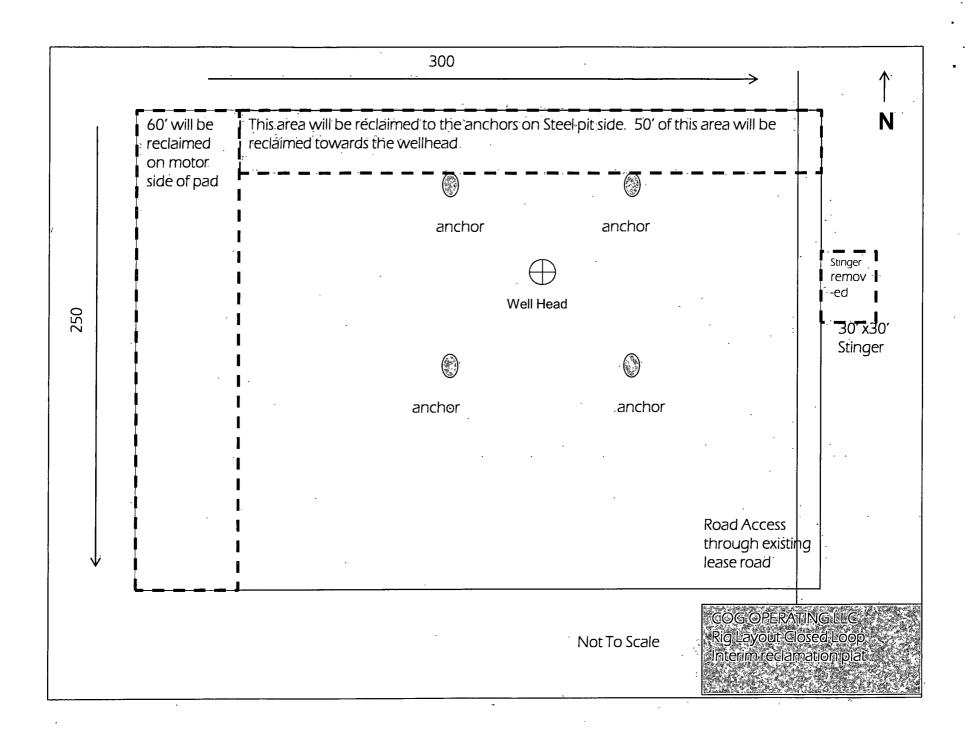
- 1. BEARDS OR CONTACT LENSES NOT ALLOWED
- 2. HARD HATS REQUIRED
- 3. SMOKING IN DESIGNATED AREAS ONLY
- 4. BE WIND CONSCIOUS AT ALL TIMES
- 5. CHECK WITH COG OPERATING FOREMAN AT

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





PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:
LEASE NO.:
LC028784A
WELL NAME & NO.:
SURFACE HOLE FOOTAGE:
BOTTOM HOLE FOOTAGE
LOCATION:
COUNTY:
COUNTY:
COG OPERATING, LLC
LC028784A
617-BURCH KEELY UNIT
10'/N. & 1980/E.
Section 2, T. 17 S., R. 29 E., NMPM
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
\boxtimes	Special Requirements
	Lesser Prairie-Chicken Timing Stipulations
	Ground-level Abandoned Well Marker
\boxtimes	Construction
	Notification
	Topsoil
	Closed Loop System
	Federal Mineral Material Pits
	Well Pads
	Roads
	Road Section Diagram
\boxtimes	Drilling
	H2S requirement
	Logging requirement
	Waste Material and Fluids
\boxtimes	Production (Post Drilling)
	Well Structures & Facilities
•	Pipelines
	Interim Reclamation
∇	Final Ahandanment & Declamation