

ATS-12-919

Form 3160-3
(April 2004)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD Artesia

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


APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work. <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. SL:LC-028784B BL:LC-028793C	
1b. Type of Well. <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name N/A	
2. Name of Operator COG Operating LLC		7. If Unit or CA Agreement, Name and No. NMNM-88525X; Burch Keely Unit	
3a. Address 550 W. Texas Ave., Suite 100 Midland, TX 79701		8. Lease Name and Well No. Burch Keely Unit #235H	
3b. Phone No. (include area code) 432-685-4384		9. API Well No. 30-015- 40638	
4. Location of Well (Report location clearly and in accordance with any State requirements *) At surface 2465' FSL & 330' FWL, Unit L At proposed prod. zone 2310' FSL & 330' FEL, Unit I		10. Field and Pool, or Exploratory Burch Keely; Glorieta-Upper Yeso	
14. Distance in miles and direction from nearest town or post office* 2 miles from Loco Hills, NM		11. Sec., T R M. or Blk. and Survey or Area Sec 23 T17S R29E	
15. Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig unit line, if any) 330'		12. County or Parish EDDY	
16. No. of acres in lease SL:1264.52 BL:1115.22		13. State NM	
17. Spacing Unit dedicated to this well 40 160		18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft 171'	
19. Proposed Depth TVD: 4779' MD: 9292' MAX 4850'		20. BLM/BIA Bond No. on file NMB000740; NMB000215	
21. Elevations (Show whether DF, KDB, RT, GL, etc) 3592' GL		22. Approximate date work will start* 08/30/2012	
23. Estimated duration 15 days			

24. Attachments

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

- | | |
|--|--|
| 1. Well plat certified by a registered surveyor. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office) | 6. Such other site specific information and/or plans as may be required by the authorized officer. |

25. Signature 	Name (Printed/Typed) Kelly J. Holly	Date 06/28/2012
--	--	--------------------

Title
Permitting Tech

Approved by (Signature) /s/ Don Peterson	Name (Printed/Typed)	Date AUG 27 2012
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Title
FIELD MANAGER

Office
CARLSBAD FIELD OFFICE

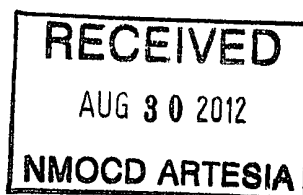
Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon
Conditions of approval, if any, are attached.

APPROVAL FOR TWO YEARS

Title 18 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



SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Approval Subject to General Requirements
& Special Stipulations Attached

Surface Use Plan
COG Operating, LLC
Burch Keely Unit 235H
SL: 2465' FSL & 330' FWL *UL L*
BHL: 2310' FSL 330' FEL *UL I*
Section 23, T-17-S, R-29-E
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 19th day of March, 2012.

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@concho.com

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010

SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

1. Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other		5. Lease Serial No NMLC028793C
2. Name of Operator COG OPERATING LLC		6. If Indian, Allottee or Tribe Name
Contact: KELLY J HOLLY E-Mail: kholly@conchoresources.com		7. If Unit or CA/Agreement, Name and/or No NMMN88525X
3a. Address 550 WEST TEXAS AVENUE SUITE 100 MIDLAND, TX 79701	3b. Phone No (include area code) Ph: 432-685-4384	8. Well Name and No BURCH KEELY UNIT 235H
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 23 T17S R29E NWSW 2465FSL 330FWL		9. API Well No 30-015-40638
		10. Field and Pool, or Exploratory BURCH KEELY-GLORIETA-UPPER YI
		11. County or Parish, and State EDDY COUNTY, NM

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

TYPE OF SUBMISSION	TYPE OF ACTION
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Deepen
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Fracture Treat
	<input type="checkbox"/> Production (Start/Resume)
	<input type="checkbox"/> Reclamation
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Alter Casing
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Well Integrity
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Plug and Abandon
	<input type="checkbox"/> Temporarily Abandon
	<input checked="" type="checkbox"/> Other
	<input type="checkbox"/> Change Plans
	<input type="checkbox"/> Plug Back
	<input type="checkbox"/> Water Disposal
	<input type="checkbox"/> Convert to Injection
	<input type="checkbox"/> Change to Original APD

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

COG Operating LLC respectfully requests permission to change the name and number of this well to:

Burch Keely Unit #950H

A revised C-102 is attached for your review.

14. I hereby certify that the foregoing is true and correct.	
Electronic Submission #145284 verified by the BLM Well Information System For COG OPERATING LLC, sent to the Carlsbad Committed to AFMSS for processing by BEVERLY WEATHERFORD on 08/09/2012 (12BMW0548SE)	
Name (Printed/Typed) KELLY J HOLLY	Title PERMITTING TECH
Signature (Electronic Submission)	Date 08/08/2012

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By _____	Title _____	Date _____
Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.		Office _____

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

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 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 30-015-40638	Pool Code 97918	Pool Name Burch Keely; Glorieta Upper Yeso
Property Code 308086	Property Name BURCH KEELY UNIT	Well Number 950H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3592'

Surface Location


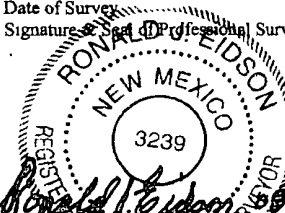
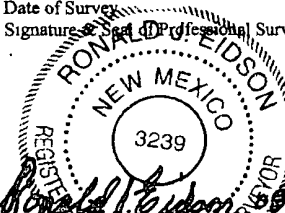
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	23	17-S	29-E		2465	SOUTH	330	WEST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	23	17-S	29-E		2310	SOUTH	330	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160			9292 8/27

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

<p>GEODETIC COORDINATES NAD 27 NME</p> <p>SURFACE LOCATION Y=661946.1 N X=586286.2 E</p> <p>BOTTOM HOLE LOCATION Y=661797.7 N X=590905.1 E</p> <p>CORNER COORDINATES TABLE</p> <table border="1"> <tr> <td>Ⓐ</td> <td>-</td> <td>Y=662121.0 N, X=585955.6 E</td> </tr> <tr> <td>Ⓑ</td> <td>-</td> <td>Y=662126.3 N, X=591234.5 E</td> </tr> <tr> <td>Ⓒ</td> <td>-</td> <td>Y=660801.2 N, X=585960.1 E</td> </tr> <tr> <td>Ⓓ</td> <td>-</td> <td>Y=660807.6 N, X=591236.9 E</td> </tr> </table>	Ⓐ	-	Y=662121.0 N, X=585955.6 E	Ⓑ	-	Y=662126.3 N, X=591234.5 E	Ⓒ	-	Y=660801.2 N, X=585960.1 E	Ⓓ	-	Y=660807.6 N, X=591236.9 E	<p>OPERATOR CERTIFICATION</p> <p>I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division</p> <p> 8-8-12 Signature Date</p> <p>Kelly J. Holly Printed Name</p> <p>kholly@concho.com E-mail Address</p> <p>SURVEYOR CERTIFICATION</p> <p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p>FEBRUARY 14, 2012 Date of Survey</p> <p> 02/03/2012 Signature of Professional Surveyor</p> <p></p> <p>Certificate Number 12641 Professional Surveyor Ronald J. Eidson 3239</p> <p>DSR Rel. WO#12.13.1388 JWSC W.O. 12.13.1388</p>
Ⓐ	-	Y=662121.0 N, X=585955.6 E											
Ⓑ	-	Y=662126.3 N, X=591234.5 E											
Ⓒ	-	Y=660801.2 N, X=585960.1 E											
Ⓓ	-	Y=660807.6 N, X=591236.9 E											

ATTACHMENT TO FORM 3160-3
COG Operating, LLC
BURCH KEELY UNIT #235H
SHL: 2465' FSL & 330' FWL, Unit L
BHL: 2310' FSL & 330' FEL, Unit I
Sec 23, T17S, R29E
Eddy County, NM

1. Proration Unit Spacing: 160 Acres
2. Ground Elevation: 3592'
3. Proposed Depths: Horizontal TVD = 4779', MD = 9292'
4. Estimated tops of geological markers:

Quaternary	Surface
Rustler	300'
Top of Salt	495'
Base of Salt	880'
Yates	923'
Seven Rivers	1214'
Queen	1821'
Grayburg	2207'
San Andres	2522'
Glorieta	3977'
Paddock	4044'
Blinberry	4470'
Tubb	5700'

5. Possible mineral bearing formations:

Water Sand	150'	Fresh Water
Grayburg	2207'	Oil/Gas
San Andres	2522'	Oil/Gas
Glorieta	3977'	Oil/Gas
Paddock	4044'	Oil/Gas
Blinebry	4470'	Oil/Gas
Tubb	5700'	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 9 5/8" casing to 1350' 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 7" x 5 1/2" production casing back 200' into the intermediate casing (although cement volume is actually calculated to surface), to be run at TD. If wellbore conditions arise that require immediate action and/or a change to this program, COG Operating LLC personnel will always react to protect the wellbore and/or environment.

See
COA

See
COA

ATTACHMENT TO FORM 3160-3
COG Operating, LLC
BURCH KEELY UNIT #235H
Page 2 of 4

6. Casing Program - Proposed

Hole size	Interval	OD of Casing	Weight	Cond.	Collar	Grade
<i>See COA</i> 17-1/2"	0' - +/- 325' ²⁴⁰	13-3/8"	48#	New	STC	H-40 or Hybrid J-55
Collapse sf - 5.36, Burst sf - 12.04, Tension sf - 20.64						
12-1/4"	0' - +/- 1350'	9-5/8"	36#	New	STC	J/K-55
Collapse sf - 3.16, Burst sf - 5.51, Tension sf - 9.32						
8-3/4" x 7 7/8"	0' - 9268'	7" x 5-1/2"	26#/17#	New	LTC	L-80
7" Csg - Collapse sf - 2.61, Burst sf - 2.03, Tension sf - 4.56						
5 1/2" Csg - Collapse sf - 2.74, Burst sf - 2.04, Tension sf - 4.22						

Production string will be a tapered string with 7" 26# L-80 LTC ran from surface to kick off point and then crossed over to 5 1/2" 17# L-80 LTC.

7. Cement Program

13 3/8" Surface Csg: Set at +/- 325' MD, 400sx Class "C" w/ 2% CaCl₂ & 0.25 pps CF, yield 1.32 cu.ft./sk., wt. 14.8 ppg. 190% excess, calculated to surface.

9 5/8" Intrmd. Csg: Set at +/- 1350' MD.

Option #1: **Single Stage (TD to Surface):** Lead Slurry: 300 sx 50:50:10:C:Poz:Gel w/ 5% salt, 5 pps LCM-1, 0.25 pps CF, yield 2.45 cu.ft./sk., 11.8 ppg. Tail Slurry: 200 sx Class "C" w/ 2% CaCl₂, yield 1.32 cu.ft./sk., wt. 14.8 ppg. 173% excess, calculated to surface.

See COA Option #2: **Multi Stage: Stage 1 (TD to DV Tool @ 375'):** 200 sx Class "C" w/ 2% CaCl₂, yield 1.32 cu.ft./sk., wt. 14.8 ppg. 91% excess. **Stage 2 (DV Tool to surface):** 300 sx 50:50:10:C:Poz:Gel w/ 5% salt, 5 pps LCM-1, 0.25 pps CF, yield 2.45 cu.ft./sk., wt. 14.8 ppg calculated to surface, 173% excess; assumption for tool is lost circulation. Multi stage tool to be set at approximately, depending on hole conditions, 375' (50' below the surface casing). Cement volumes will be adjusted proportionately for depth changes of multi stage tool.

7" x 5 1/2" Production Csg: Set at +/- 9292' MD.

Option #1: **Single Stage (KOP to surface):** Lead Slurry: 400 sx 35:65:6:C:Poz:Gel w/ 5% salt, 5 pps LCM, 0.2% SMS, 0.3% FL-52A, 0.125 pps CF, yield 2.01 cu.ft./sk., wt. 12.5 ppg. Tail Slurry: 300 sx 50:50:2:C:Poz:Gel w/ 5% salt, 3 pps LCM, 0.6% SMS, 1% FL-25, 1% BA-58, 0.125 pps CF, 0.3% FL-52A; yield 1.37 cu.ft./sk., wt. 14.0 ppg. DV Tool and ECP to be set at kick off point with 7" cemented to surface and 5 1/2" run with +/- 18 isolation packers and sliding sleeves in uncemented lateral. 118% excess in open hole, from kick off point, calculated to surface. **This is a minimum volume and will be adjusted up after caliper is run.**

Option #2: **Multi Stage (DV Tool & ECP (external csg. packer) @ KOP and DV Tool at 3000'):** **Stage 1:** (KOP To DV Tool at 3000'): 200 sx 50:50:2:C:Poz:Gel w/ 5% salt, 3 pps LCM, 0.6% SMS, 1% FL-25, 1% BA-58, .125 pps CF, 0.3% FL-52A; yield 1.37 cu.ft./sk., wt. 14.00 ppg. 33% excess. **This is a minimum volume and will be adjusted up after caliper is run.** **Stage 2 (DV Tool to surface)** Lead Slurry: 400 sx 50:50:2:C:Poz:Gel w/ 5% salt, 3 pps LCM, 0.6% SMS, 1% FL-25, 1% BA-58, 0.125 pps CF, 0.3% FL-52A; yield 1.37 cu.ft./sk., wt. 14.0 ppg. Tail Slurry: 300 sx Class C w/ 0.3% R-3 + 1.5% CD-32, yield 1.02 cu.ft./sk., wt. 16.8 ppg. 154% excess calculated back to surface (no need for excess in casing overlap). **This is a minimum volume and will be adjusted up after caliper is run.**

ATTACHMENT TO FORM 3160-3
COG Operating, LLC
BURCH KEELY UNIT #235H
Page 3 of 4

You will note that in option #2 the Multi stage tool (DV Tool) will be set at approximately 3000', depending on hole conditions. Cement volumes will be adjusted proportionately for depth changes of multi stage tool; assumption for use of tool is water flow.

8. Pressure Control Equipment:

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" BOP will be used during the drilling of the well. A 13 5/8" permanent casing head will be installed on the 13 3/8" casing. The BOP will be nipped up on the 13 5/8" permanent casing head and tested to 2000 psi. After setting 9-5/8", permanent "B section" well head will be installed and the BOP will then be nipped up on the permanent B section well head 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.

9. Proposed Mud Circulating System

Interval	Mud Wt.	Visc.	FL	Type Mud System
0' - 325' <i>290</i>	8.5	28	NC	Fresh water native mud w/ paper for seepage and sweeps. Lime for PH.
325' - 1350'	10	30	NC	Brine mud, lime for PH and paper for seepage and sweeps.
1350' - 9292'	9.1	29	NC	Drill section with fresh water/cut brine circulating the reserve utilizing periodic sweeps of paper as needed for seepage control and solids removal.

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

10. Production Hole Drilling Summary:

Drill 8 3/4" hole and kick off at +/- 4358', building curve over +/- 750' to horizontal at 4850' TVD. Drill 7 7/8" lateral section in a easterly direction for +/-4619' lateral to TD at +/-9292' MD, 4779' TVD. Run 7" x 5-1/2" production casing. 7" to be ran from surface to kickoff point and changed over to 5 1/2" with DV Tool and ECP at kickoff point. 5 1/2" casing will be ran from kickoff point to td and isolation packers set throughout lateral. 7" to be cemented from kickoff point to surface.

11. 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.

ATTACHMENT TO FORM 3160-3
COG Operating, LLC
BURCH KEELY UNIT #235H
Page 4 of 4

12. Logging, Testing and Coring Program:

- A. No electric logs to be run. *See con*
- B. The mud logging program will consist of lagged 10' samples from intermediate casing point to T.D. in vertical pilot hole and from Kick off point to TD in Horizontal hole.
- C. Drill Stem test is not anticipated.
- D. No conventional coring is anticipated.
- E. Further testing procedures will be determined after the 7" x 5 1/2" production casing has been cemented at TD based on drill shows and log evaluation.

13. Abnormal Conditions, Pressures, Temperatures and Potential Hazards:

No abnormal pressures or temperatures are anticipated. The estimated bottom hole temperature at TD of pilot hole is 90 degrees and estimated maximum bottom hole pressure is 2102 psig. Measurable gas volumes or Hydrogen Sulfide levels have not been encountered during drilling operations in this area, however an H₂S plan is attached to the Drilling Program. No major loss of circulation zones has been reported in offsetting wells.

14. Anticipated Starting Date

Drilling operations will commence approximately on August 30, 2012 with drilling and completion operations lasting approximately 90 days.

COG Operating LLC

Eddy County, NM

Burch Keely Unit 235H

Burch Keely Unit 235H

Wellbore #1

Plan: Plan #3

Standard Planning Report

28 June, 2012

Planning Report

Database:	Houston R5000 Database	Local Co-ordinate Reference:	Site Burch Keely Unit 235H
Company:	COG Operating LLC	TVD Reference:	WELL @ 3610'00ft (Silver Oak 8)
Project:	Eddy County, NM	MD Reference:	WELL @ 3610'00ft (Silver Oak 8)
Site:	Burch Keely Unit 235H	North Reference:	Grid
Well:	Burch Keely Unit 235H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3		

Project:	Eddy County, NM		
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:	Burch Keely Unit 235H		
Site Position:		Northing:	661,946 10 ft
From:	Map	Easting:	586,286 20 ft
Position Uncertainty:	0 00 ft	Slot Radius:	13 200 in
		Latitude:	32.81945868
		Longitude:	-104.05246365
		Grid Convergence:	0 15 °

Well: Burch Keely Unit 235H						
Well Position	+N-S	0 00 ft	Northing:	661,946.10 ft	Latitude:	32 81945868
	+E-W	0 00 ft	Easting:	586,286.20 ft	Longitude:	-104 05246365
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	3,592.00 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/27/2012	7 76	60.63	48,842

Design: Plan #3				
Audit Notes:				
Version:		Phase: PLAN	Tie On Depth: 0 00	
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0 00	0.00	91 84

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0 00	0 00	0 00	0 00	0.00	0 00	0.00	0 00	0.00	
4,358 09	0 00	0 00	4,358 09	0 00	0.00	0 00	0.00	0 00	0.00	
4,983 09	75.00	114 78	4,819.29	-148 33	321 30	12 00	12 00	0 00	114 78	
5,231 89	91 00	89 30	4,850.00	-198 30	560 20	12 00	6 43	-10 24	-59 79	
9,291 52	91 00	-89.30	4,779 00	-148 40	4,618 90	0 00	0 00	0 00	0 00	PBHL (Burch Keely U

Planning Report

Database:	Houston R5000 Database	Local Co-ordinate Reference:	Site Burch Keely Unit 235H
Company:	COG Operating LLC	TVD Reference:	WELL @ 3610 00ft (Silver Oak 8)
Project:	Eddy County, NM	MD Reference:	WELL @ 3610 00ft (Silver Oak 8)
Site:	Burch Keely Unit 235H	North Reference:	Grid
Well:	Burch Keely Unit 235H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3		

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)
4,358.09	0 00	0 00	4,358.09	0 00	0 00	0 00	0 00	0.00	0 00
Start Build @ 12.00°/100'									
4,400.00	5 03	114.78	4,399.95	-0.77	1.67	1.69	12.00	12.00	0 00
4,500.00	17 03	114.78	4,497.92	-8.77	19.01	19.28	12.00	12.00	0 00
4,600.00	29 03	114.78	4,589.78	-25.14	54.46	55.24	12.00	12.00	0 00
4,700.00	41 03	114.78	4,671.52	-49.16	106.48	108.00	12.00	12.00	0 00
4,800.00	53 03	114.78	4,739.56	-79.77	172.79	175.26	12.00	12.00	0 00
4,900.00	65 03	114.78	4,790.92	-115.64	250.50	254.08	12.00	12.00	0 00
4,983.09	75 00	114.78	4,819.29	-148.33	321.30	325.90	12.00	12.00	0 00
Continue Build & Turn @ 12.00°/100'									
4,992.95	75 60	113.72	4,821.79	-152.24	330.00	334.72	12.00	6.06	-10.71
PP @ 4992.95 MD, 4821.79 TVD, 75.60 INC, 113.72 AZ, 334.72 VS									
5,000.00	76 03	112.97	4,823.52	-154.95	336.27	341.08	12.00	6.10	-10.66
5,100.00	82.34	102.58	4,842.32	-184.79	429.65	435.36	12.00	6.31	-10.40
5,200.00	88 90	92.49	4,849.98	-197.80	528.32	534.40	12.00	6.55	-10.09
5,231.89	91 00	89.30	4,850.00	-198.30	560.20	566.28	12.00	6.61	-10.02
Landing Point - Hold @ 91.00° INC, 89.30° AZ									
5,300.00	91 00	89.30	4,848.81	-197.46	628.30	634.31	0 00	0 00	0 00
5,400.00	91 00	89.30	4,847.06	-196.23	728.27	734.20	0 00	0 00	0 00
5,500.00	91 00	89.30	4,845.32	-195.00	828.25	834.08	0 00	0 00	0 00
5,600.00	91 00	89.30	4,843.57	-193.77	928.23	933.97	0 00	0 00	0 00
5,700.00	91 00	89.30	4,841.82	-192.54	1,028.21	1,033.86	0 00	0 00	0 00
5,800.00	91 00	89.30	4,840.07	-191.31	1,128.18	1,133.74	0 00	0 00	0 00
5,900.00	91 00	89.30	4,838.32	-190.08	1,228.16	1,233.63	0 00	0 00	0 00
6,000.00	91 00	89.30	4,836.57	-188.86	1,328.14	1,333.52	0 00	0 00	0 00
6,100.00	91 00	89.30	4,834.82	-187.63	1,428.11	1,433.40	0 00	0 00	0 00
6,200.00	91 00	89.30	4,833.07	-186.40	1,528.09	1,533.29	0 00	0 00	0 00
6,300.00	91 00	89.30	4,831.32	-185.17	1,628.07	1,633.17	0 00	0 00	0 00
6,400.00	91 00	89.30	4,829.57	-183.94	1,728.05	1,733.06	0 00	0 00	0 00
6,500.00	91 00	89.30	4,827.82	-182.71	1,828.02	1,832.95	0 00	0 00	0 00
6,600.00	91 00	89.30	4,826.08	-181.48	1,928.00	1,932.83	0 00	0 00	0 00
6,700.00	91 00	89.30	4,824.33	-180.25	2,027.98	2,032.72	0 00	0 00	0 00
6,800.00	91 00	89.30	4,822.58	-179.02	2,127.95	2,132.60	0 00	0 00	0 00
6,900.00	91 00	89.30	4,820.83	-177.79	2,227.93	2,232.49	0 00	0 00	0 00
7,000.00	91 00	89.30	4,819.08	-176.56	2,327.91	2,332.38	0 00	0 00	0 00
7,100.00	91 00	89.30	4,817.33	-175.34	2,427.89	2,432.26	0 00	0 00	0 00
7,200.00	91 00	89.30	4,815.58	-174.11	2,527.86	2,532.15	0 00	0 00	0 00
7,300.00	91 00	89.30	4,813.83	-172.88	2,627.84	2,632.04	0 00	0 00	0 00
7,400.00	91 00	89.30	4,812.08	-171.65	2,727.82	2,731.92	0 00	0 00	0 00
7,500.00	91 00	89.30	4,810.33	-170.42	2,827.79	2,831.81	0 00	0 00	0 00
7,600.00	91 00	89.30	4,808.59	-169.19	2,927.77	2,931.69	0 00	0 00	0 00
7,700.00	91 00	89.30	4,806.84	-167.96	3,027.75	3,031.58	0 00	0 00	0 00
7,800.00	91 00	89.30	4,805.09	-166.73	3,127.73	3,131.47	0 00	0 00	0 00
7,900.00	91 00	89.30	4,803.34	-165.50	3,227.70	3,231.35	0 00	0 00	0 00
8,000.00	91 00	89.30	4,801.59	-164.27	3,327.68	3,331.24	0 00	0 00	0 00
8,100.00	91 00	89.30	4,799.84	-163.04	3,427.66	3,431.12	0 00	0 00	0 00
8,200.00	91 00	89.30	4,798.09	-161.82	3,527.63	3,531.01	0 00	0 00	0 00
8,300.00	91 00	89.30	4,796.34	-160.59	3,627.61	3,630.90	0 00	0 00	0 00
8,400.00	91 00	89.30	4,794.59	-159.36	3,727.59	3,730.78	0 00	0 00	0 00
8,500.00	91 00	89.30	4,792.84	-158.13	3,827.57	3,830.67	0 00	0 00	0 00
8,600.00	91 00	89.30	4,791.09	-156.90	3,927.54	3,930.56	0 00	0 00	0 00
8,700.00	91 00	89.30	4,789.35	-155.67	4,027.52	4,030.44	0 00	0 00	0 00
8,800.00	91 00	89.30	4,787.60	-154.44	4,127.50	4,130.33	0 00	0 00	0 00

Planning Report

Database:	Houston R5000 Database	Local Co-ordinate Reference:	Site Burch Keely Unit 235H
Company:	COG Operating LLC	TVD Reference:	WELL @ 3610.00ft (Silver Oak 8)
Project:	Eddy County, NM	MD Reference:	WELL @ 3610.00ft (Silver Oak 8)
Site:	Burch Keely Unit 235H	North Reference:	Gnd
Well:	Burch Keely Unit 235H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3		

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)
8,900.00	91.00	89.30	4,785.85	-153.21	4,227.47	4,230.21	0.00	0.00	0.00
9,000.00	91.00	89.30	4,784.10	-151.98	4,327.45	4,330.10	0.00	0.00	0.00
9,100.00	91.00	89.30	4,782.35	-150.75	4,427.43	4,429.99	0.00	0.00	0.00
9,200.00	91.00	89.30	4,780.60	-149.52	4,527.41	4,529.87	0.00	0.00	0.00
9,291.52	91.00	89.30	4,779.00	-148.40	4,618.90	4,621.28	0.00	0.00	0.00
TD @ 9291.52' MD, 4779.00' TVD - PBHL (Burch Keely Unit 235H Plan 3)									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL (Burch Keely Unit	0.00	0.00	4,779.00	-148.40	4,618.90	661,797.70	590,905.10	32.81901614	-104.03743005
- plan hits target center									
- Point									

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,358.09	4,358.09	0.00	0.00	Start Build @ 12.00°/100'
4,983.09	4,819.29	-148.33	321.30	Continue Build & Turn @ 12.00°/100'
4,992.95	4,821.79	-152.24	330.00	PP @ 4992.95 MD, 4821.79 TVD, 75.60 INC, 113.72 AZ, 334.72 VS
5,231.89	4,850.00	-198.30	560.20	Landing Point - Hold @ 91.00° INC, 89.30° AZ
9,291.52	4,779.00	-148.40	4,618.90	TD @ 9291.52' MD, 4779.00' TVD



**COG Operating LLC
Burch Keely Unit 235H
Eddy County, NM
Plan #3**



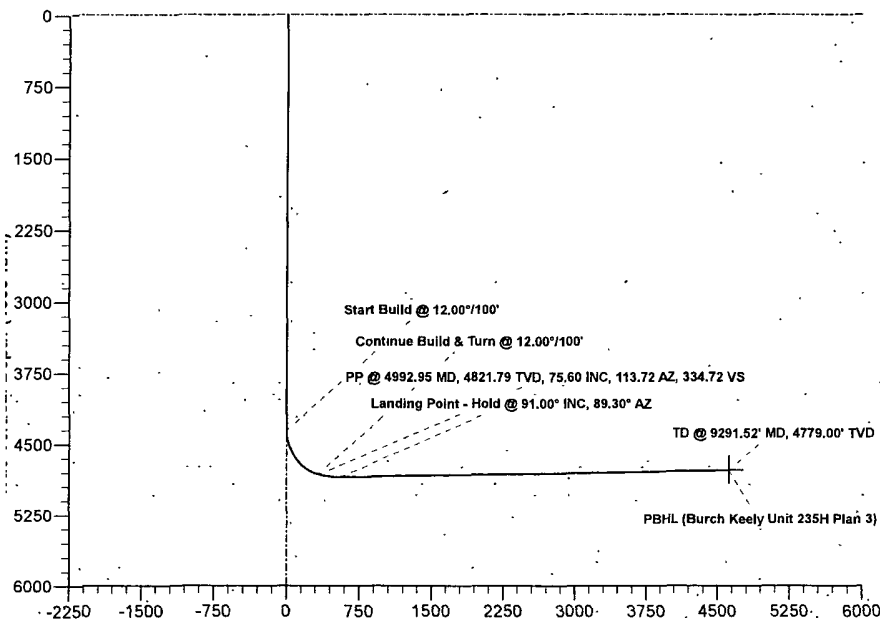
Surface Location		Ground Elev: 3592.00 WELL @ 3610.00ft (Silver Oak 8)			
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	661946.10	-586286.20	32.81945868	-104.05246365

TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude
PBHL (Burch Keely Unit 235H Plan 3)	4779.00	-148.40	4618.90	661797.70	590905.10	32.81901614
						Longitude
						-104.03743005

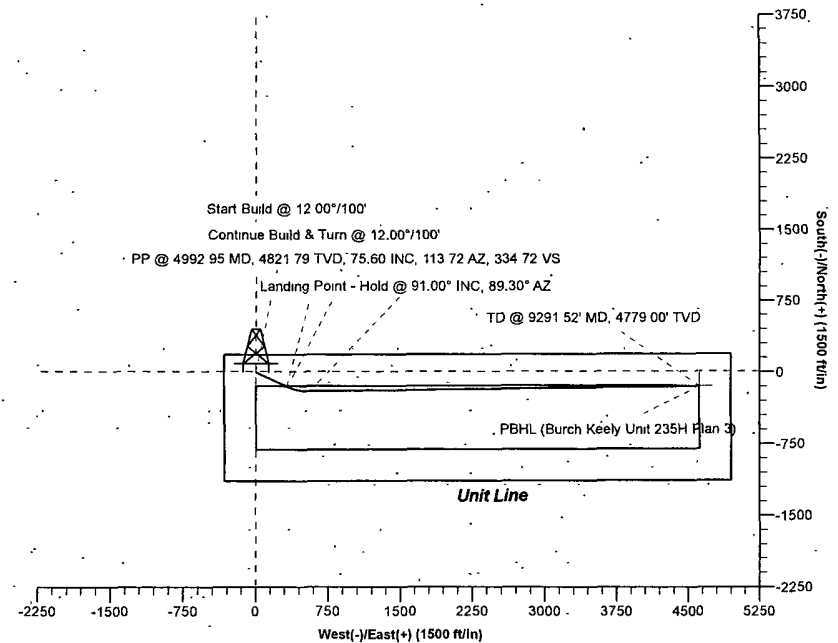


Azimuths to Grid North
True North -0.15°
Magnetic North. 7.60°

Magnetic Field
Strength 48841.8snT
Dip Angle 60.63°
Date 3/27/2012
Model: IGRF2010

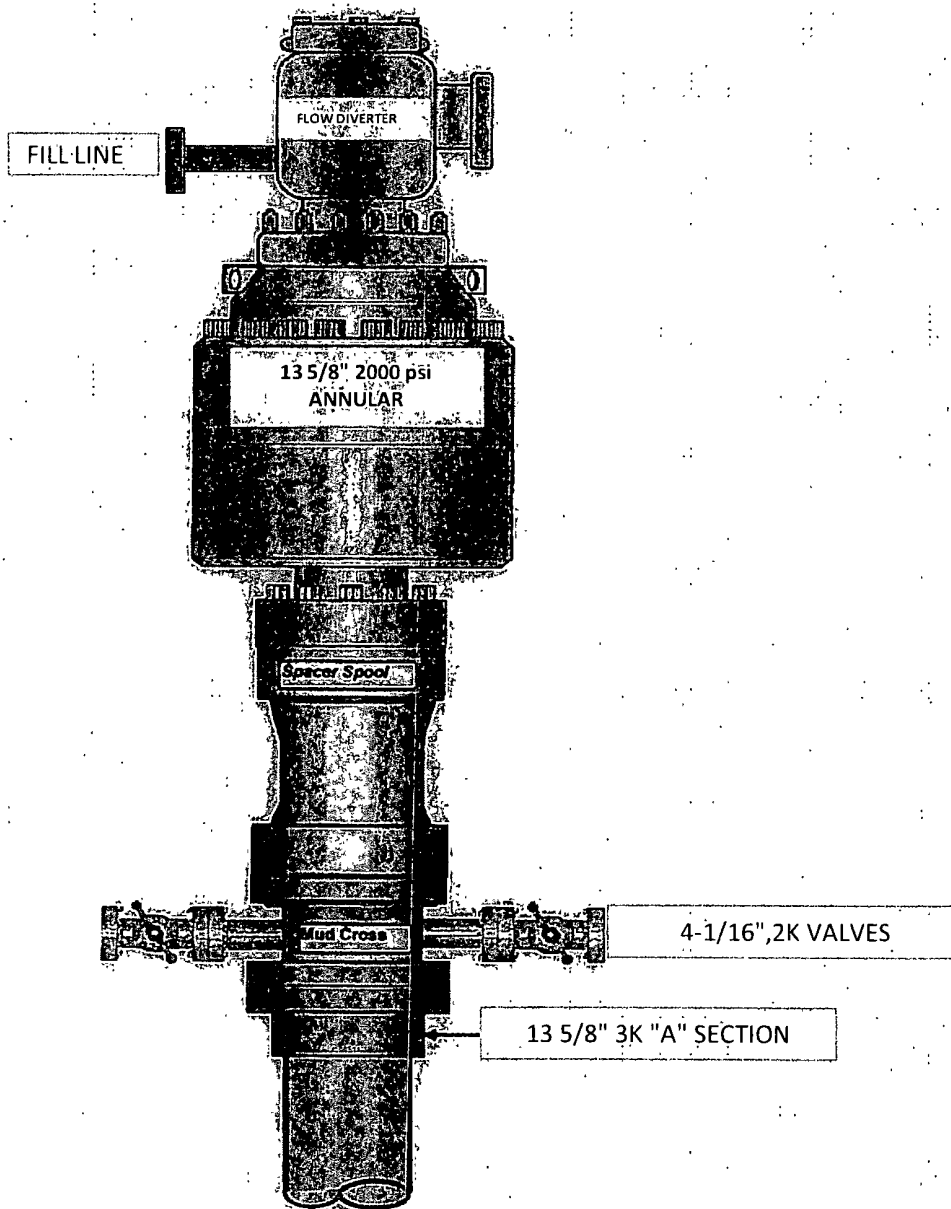


Vertical Section at 91.84° (1500 ft/in)



SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	4358.09	0.00	0.00	4358.09	0.00	0.00	0.00	0.00	0.00	Start Build @ 12.00°/100'
3	4983.09	75.00	114.78	4819.29	-148.33	321.30	12.00	114.78	325.90	Continue Build & Turn @ 12.00°/100'
4	5231.89	91.00	89.30	4850.00	-198.30	560.20	12.00	-59.79	566.28	Landing Point - Hold @ 91.00° INC, 89.30° AZ
5	9291.52	91.00	89.30	4779.00	-148.40	4618.90	0.00	0.00	4621.28	TD @ 9291.52' MD, 4779.00' TVD

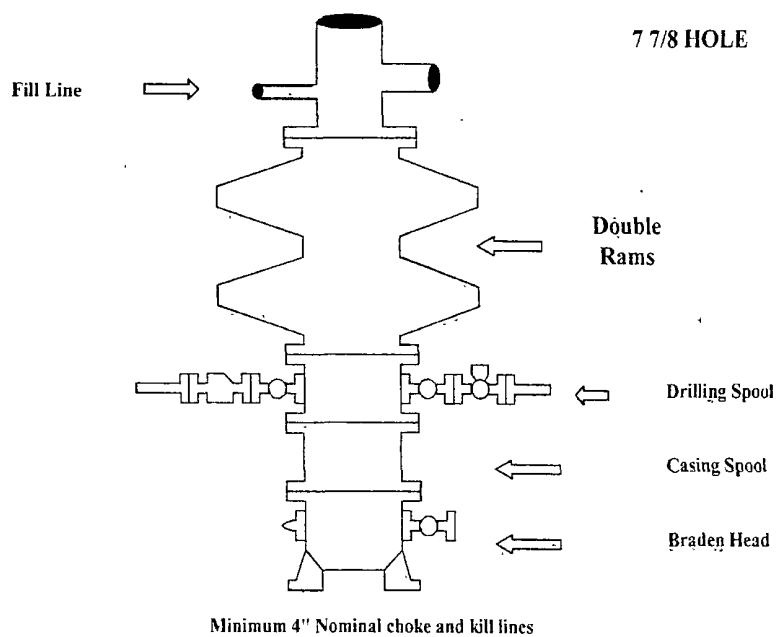
13 5/8" 2K ANNULAR



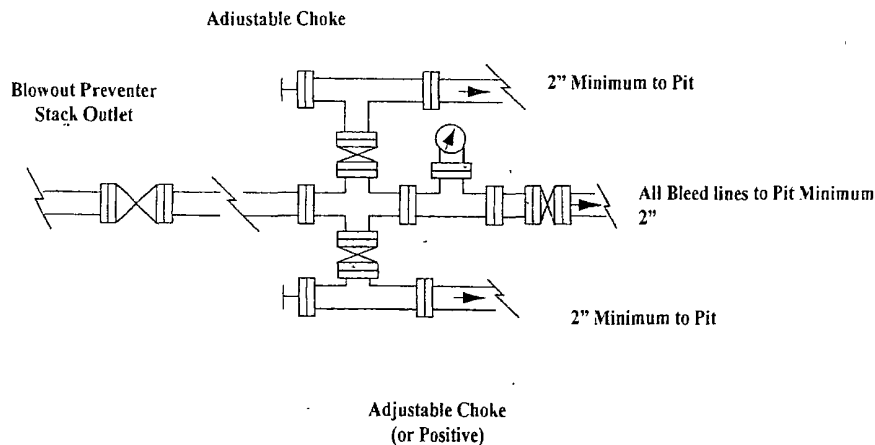
COG Operating LLC

Exhibit #9

BOPE and Choke Schematic



Choke Manifold Requirement (2000 psi WP)
No Annular Required

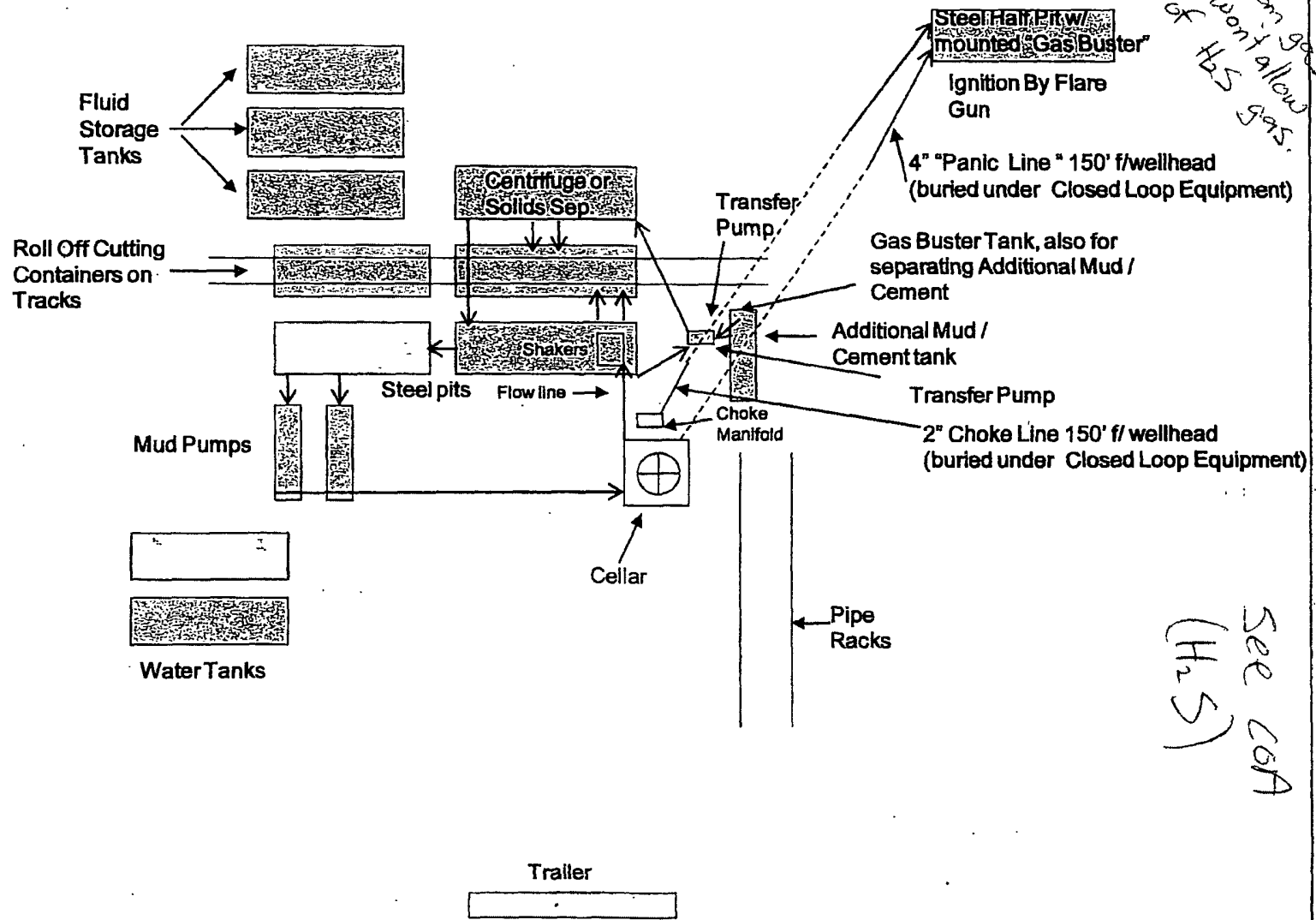


NOTES REGARDING THE BLOWOUT PREVENTERS

**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
Closed Loop Equipment Diagram



Closed Loop Operation & Maintenance Procedure

All drilling fluid circulated over shaker(s) with cuttings discharged into roll off container.

Fluid and fines below shaker(s) are circulated with transfer pump through centrifuge(s) or solids separator with cuttings and fines discharged into roll off container.

Fluid is continuously re-circulated through equipment with polymer added to aid separation of cutting fines.

Roll off containers are lined and de-watered with fluids re-circulated into system.

Additional tank is used to capture unused drilling fluid or cement returns from casing jobs.

This equipment will be maintained 24 hrs./day by solids control personnel and or rig crews that stay on location.

Cuttings will be hauled to either:

CRI (permit number R9166)

or

GMI (permit number 711-019-001)

dependent upon which rig is available to drill this well.

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 tubular are to be used, personnel will be trained in their special maintenance requirements.
2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
3. The contents and requirements of the 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

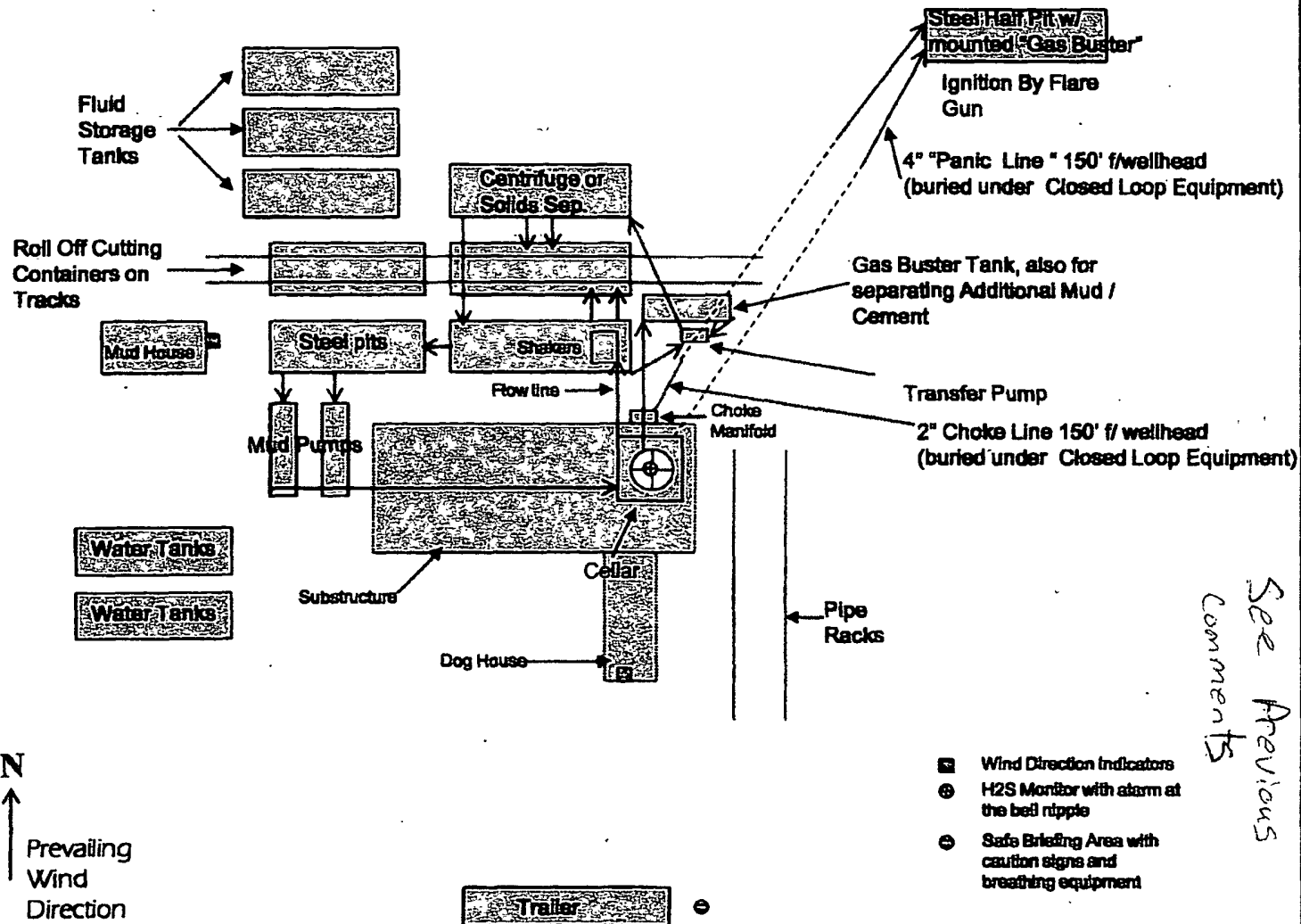
LEA COUNTY EMERGENCY NUMBERS

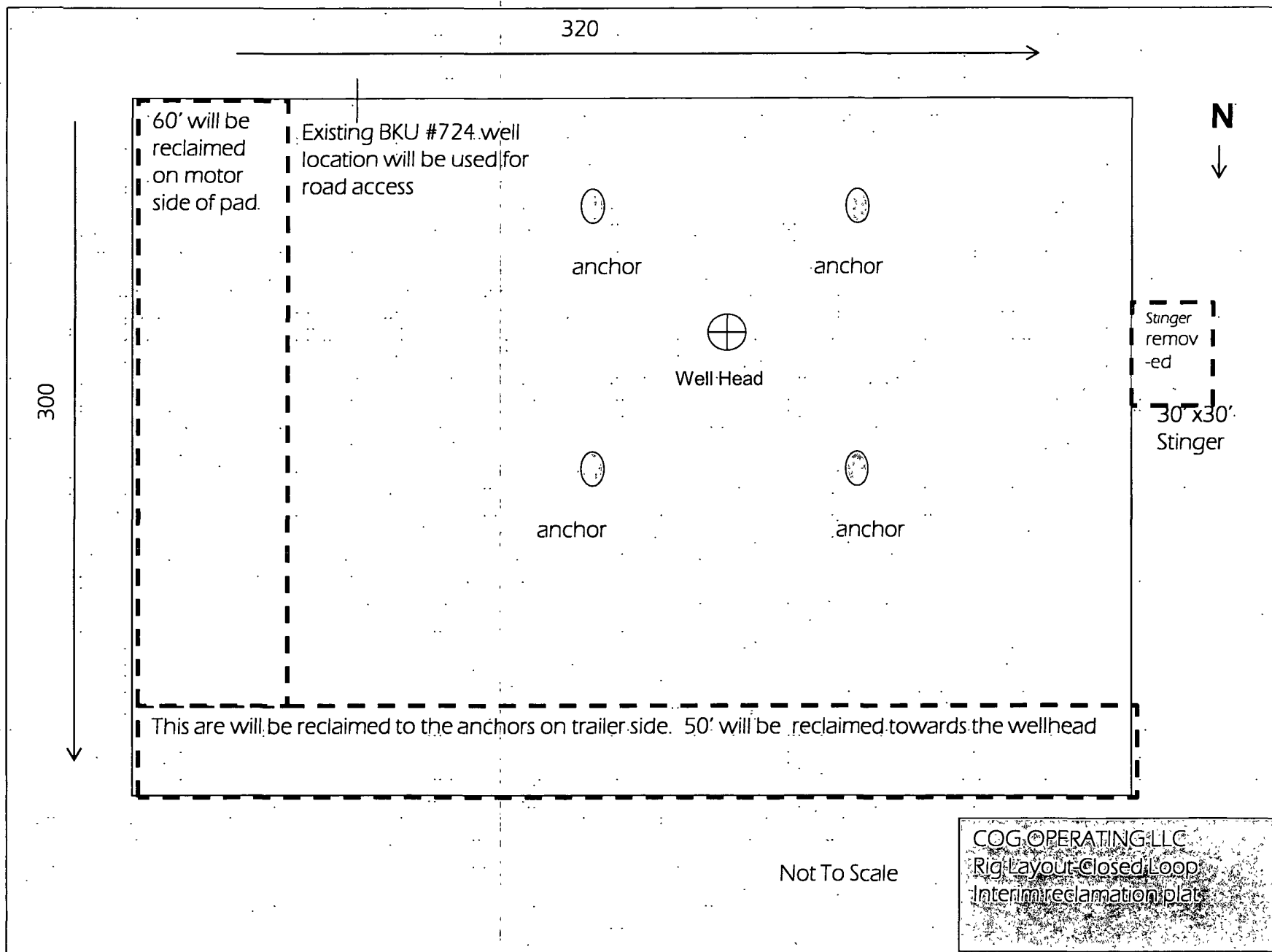
HOBBS FIRE DEPT. 575-397-9308
HOBBS POLICE DEPT. 575-397-9285
LEA CO. SHERIFF DEPT. 575-396-1196

COG Operating LLC

EXHIBIT 8

Drilling Location - H2S Safety Equipment Diagram





PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Operating
LEASE NO.:	LC028793C
WELL NAME & NO.:	950H Burch Keely Unit
SURFACE HOLE FOOTAGE:	2465' FSL & 330' FWL
BOTTOM HOLE FOOTAGE:	2310' FSL & 330' FEL
LOCATION:	Section 23, T.17 S., R.29 E., NMPM
COUNTY:	Eddy County, New Mexico

TABLE OF CONTENTS

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

- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☒ **Special Requirements**
 - Lesser Prairie-Chicken Timing Stipulations
 - Ground-level Abandoned Well Marker
- ☒ **Construction**
 - Notification
 - Topsoil
 - Closed Loop System
 - Federal Mineral Material Pits
 - Well Pads
 - Roads
- ☐ **Road Section Diagram**
- ☒ **Drilling**
 - H2S requirement
 - Logging requirement
 - Waste Material and Fluids
- ☒ **Production (Post Drilling)**
 - Well Structures & Facilities
 - Pipelines
- ☐ **Interim Reclamation**
- ☒ **Final Abandonment & Reclamation**