ATS-12-547

OCD-ARTESIA

Form 3160-3
(April 2004)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5 Lease Serial No: **NMLC-054406**

6 If Indian, Allotee or Tribe Name: **N/A**

1a Type of work. ☑ DRILL ☐ REENTER

7 If Unit or CA Agreement, Name and No: **NMNM-88525X; Burch Keely Unit**

1b Type of Well. ☑ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone

8 Lease Name and Well No: **BURCH KEELY UNIT #858**

2 Name of Operator: **COG Operating LLC**

9 API Well No. **30-015-** 40382 JCS 6/7/2012

3a Address: **550 W. Texas Ave., Suite 100 Midland, TX 79701**

3b Phone No. *(include area code)*: **432-221-0336**

10 Field and Pool, or Exploratory: **Grayburg Jackson; SR-Q-G-SA**

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

At surface: **SHL: 1395' FNL & 2338' FWL, Unit F**

At proposed prod zone: **BHL: 1330' FNL & 1980' FWL, Unit F**

11 Sec, T R M. or Blk. and Survey or Area: **Sec 24 T17S R29E**

14 Distance in miles and direction from nearest town or post office*: **2 miles from Loco Hills, NM**

12. County or Parish: **EDDY**

13. State: **NM**

15 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig unit line, if any)	16 No of acres in lease	17 Spacing Unit dedicated to this well
1395'	40	40
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft	**19 Proposed Depth**	**20 BLM/BIA Bond No on file**
136'	TVD: 4100' MD: 4123'	NMB000740; NMB000215
21 Elevations (Show whether DF, KDB, RT, GL, etc)	**22 Approximate date work will start***	**23 Estimated duration**
3595' GL	05/31/2012	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
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)*	Date
Kacie Connally	Kacie Connally	03/12/2012
Title: Permitting Tech		

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
/s/ Don Peterson		MAY 31 2012
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 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

RECEIVED
JUN 04 2012
NMOCD ARTESIA

Approval Subject to General Requirements & Special Stipulations Attached

SEE ATTACHED FOR CONDITIONS OF APPROVAL

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

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	Pool Code	Pool Name
30-015- 40382	28509	GRAYBURG JACKSON; SR-Q-G-SA

Property Code	Property Name	Well Number
308086	BURCH KEELY UNIT	858

OGRID No.	Operator Name	Elevation
229137	COG OPERATING, LLC	3595'

Surface Location

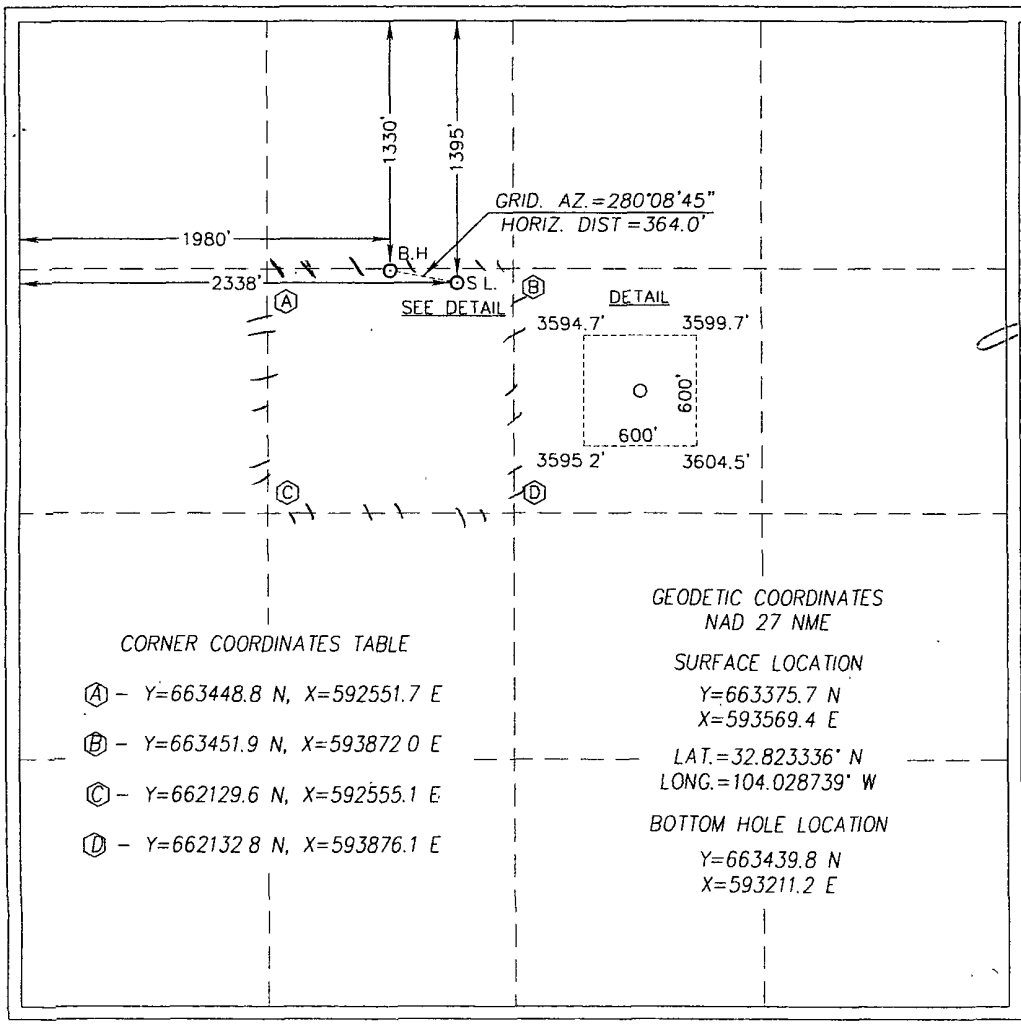
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
F	24	17-S	29-E		1395	NORTH	2338	WEST	EDDY

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
F	24	17-S	29-E		1330	NORTH	1980	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
40			

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



CORNER COORDINATES TABLE

(A) - Y=663448.8 N, X=592551.7 E
(B) - Y=663451.9 N, X=593872.0 E
(C) - Y=662129.6 N, X=592555.1 E
(D) - Y=662132.8 N, X=593876.1 E

GEODETIC COORDINATES
NAD 27 NME

SURFACE LOCATION
Y=663375.7 N
X=593569.4 E
LAT.=32.823336° N
LONG.=104.028739° W

BOTTOM HOLE LOCATION
Y=663439.8 N
X=593211.2 E

OPERATOR CERTIFICATION

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

Signature 5/11/2012 Date

Robyn M. Odom
Printed Name

Rodom@concho.com
E-mail Address

SURVEYOR CERTIFICATION

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

FEBRUARY 17, 2012
Date of Survey

Signature & Seal of Professional Surveyor:

RONALD J. EIDSON NEW MEXICO 3239 REGISTERED PROFESSIONAL SURVEYOR

5/10/2012

Certificate Number: Gary G. Eidson 12641
Ronald J Eidson 3239

AF/DSR JWSC W O 12 13.0926

MASTER DRILLING PROGRAM

1. Geologic Name of Surface Formation

Quaternary

2. Estimated Tops of Important Geologic Markers:

Quaternary	Surface
Rustler	220'
Salt	360'
Base of Salt	780'
Yates	950'
Seven Rivers	1235'
Queen	1845'
Grayburg	2220'
San Andres	2540'
Glorieta	4000'
Paddock	4075'

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

Water Sand	150'	Fresh Water
Grayburg	2220'	Oil/Gas
San Andres	2540'	Oil/Gas
Glorieta	4000'	Oil/Gas
Paddock	4075'	Oil/Gas

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to ~~300'~~ 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.

See COA

See COA

4. Casing Program

See COA

Hole Size	Interval	OD Casing	Weight	Grade	Jt., Condition	Jt.	brst/clps/ten
17 ½"	0-~~300'~~ 285	13 3/8"	48#	H-40/J-55 Hybrid	ST&C/New	ST&C	9.22/3.943/15.8
11"	0-~~850'~~ 990	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 See COA

13 3/8" Surface Casing: Class C w/ 2% Cacl2 + 0.25 pps CF, 400 sx, yield 1.32, back to surface. 154% excess

8 5/8" Intermediate Casing:

11" Hole:
Single Stage: 50:50:10 C:Poz:Gel w/ 5% Salt +0.25% CF, 300 sx lead, yield-2.45 + Class C w/2% CaCl2, 200 sx tail, yield-1.32, back to surface. 363% excess
Multi-Stage: Stage 1: Class C w/2% CaCl2, 200 sx, yield - 1.32; 108% excess Stage 2: 50:50:10 C:Poz:Gel w/ 5% Salt +0.25% CF, 300 sx, yield - 2.45, back to surface, 726% excess; assumption for tool is lost circulation. Multi stage tool to be set at approximately, depending on hole conditions, 350' (50' below the surface casing). Cement volumes will be adjusted proportionately for depth changes of multi stage tool.

5 1/2" Production Casing:

Single Stage: LEAD 500 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-2.05; + TAIL 400 sx 50:50:2 C:Poz:Gel w/ 5% Salt + 3 pps LCM + 0.6% SMS + 1% FL-25 + 1% BA-58 + 0.3% FL-52A + 0.125 pps CF, yield-1.37, to 200' minimum tie back to intermediate casing. 106% open hole excess, cement calculated back to surface.
Multi-Stage: Stage 1: (Assumed TD of 4100') 500 sx 50:50:2 C:Poz:Gel w/ 5% Salt + 3 pps LCM + 0.6% SMS + 1% FL-25 + 1% BA-58 + 0.3% FL-52A + 0.125 pps CF, yield - 1.37, 89% excess; Stage 2: LEAD

450 sx 50:50:2 C:Poz:Gel w/ 5% Salt + 3 pps LCM + 0.6% SMS + 1% FL-25 + 1% BA-58 + 0.3% FL-52A + 0.125 pps CF, yield - 1.37, + TAIL 250 sx Class C w/ 0.3% R-3 + 1.5% CD-32, yield – 1.02 148% open hole excess, cement calculated back to surface. Multi stage tool to be set at approximately, depending on hole conditions, 2500'. Cement volumes will be adjusted proportionately for depth changes of multi stage tool, assumption for tool is water flow.

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, 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. 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
0-300' 285	Fresh Water	8.5	28	N.C.
300-850' 990	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.

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 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 1760 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 San Andres formation.

CONCHO

COG Operating LLC

Eddy County, NM (NAN27 NME)
Burch Keely Unit #858

OH

Plan: Plan #2 - 7-7/8" Hole
SHL = 1395' FNL & 2338' FWL
BHL = 1330' FNL & 1980' FWL
Top of Paddock = 62' N of Surface & 345' W of Surface @ 4000' TVD

Standard Planning Report

09 May, 2012

Scientific Drilling

Database:	EDM 5000 1 Single User Db	**Local Co-ordinate Reference:**	Site Burch Keely Unit #858
Company:	COG Operating LLC	**TVD Reference:**	GL @ 3595 00usft
Project:	Eddy County, NM (NAN27 NME)	**MD Reference:**	GL @ 3595 00usft
Site:	Burch Keely Unit #858	**North Reference:**	Grid
Well:	Burch Keely Unit #858	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2 - 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 Burch Keely Unit #858

Site Position:		**Northing:**	663,375 70 usft	**Latitude:**	32° 49' 24 011 N
From:	Map	**Easting:**	593,569 40 usft	**Longitude:**	104° 1' 43 460 W
Position Uncertainty:	0 00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0 17°

Well Burch Keely Unit #858

Well Position	**+N/-S**	0 00 usft	**Northing:**	663,375.70 usft	**Latitude:**	32° 49' 24.011 N
	+E/-W	0 00 usft	**Easting:**	593,569 40 usft	**Longitude:**	104° 1' 43 460 W
Position Uncertainty		0 00 usft	**Wellhead Elevation:**		**Ground Level:**	3,595 00 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	05/09/12	7 73	60 64	48,835

Design Plan #2 - 7-7/8" Hole

Audit Notes:

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

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0 00	0 00	0 00	280 15

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
1,150 00	0 00	0 00	1,150.00	0 00	0.00	0 00	0 00	0 00	0 00	
1,525 26	7 51	280 15	1,524.19	4 32	-24 16	2 00	2 00	-21 28	280 15	
4,123 33	7 51	280 15	4,100 00	64.10	-358 20	0 00	0.00	0 00	0 00	PBHL-BKU #858

Database:	EDM 5000 1 Single User Db	**Local Co-ordinate Reference:**	Site Burch Keely Unit #858
Company:	COG Operating LLC	**TVD Reference:**	GL @ 3595 00usft
Project:	Eddy County, NM (NAN27 NME)	**MD Reference:**	GL @ 3595 00usft
Site:	Burch Keely Unit #858	**North Reference:**	Grid
Well:	Burch Keely Unit #858	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2 - 7-7/8" Hole		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
1,050 00	0 00	0 00	1,050 00	0 00	0.00	0 00	0 00	0 00	0 00
8-5/8" Casing									
1,150 00	0 00	0 00	1,150 00	0 00	0 00	0.00	0 00	0.00	0 00
Start Build 2.00°/100'									
1,200 00	1 00	280 15	1,200.00	0.08	-0 43	0 44	2 00	2 00	0 00
1,300 00	3 00	280 15	1,299 93	0 69	-3 86	3.93	2 00	2 00	0 00
1,400 00	5 00	280 15	1,399 68	1 92	-10 73	10 90	2 00	2 00	0 00
1,500 00	7 00	280 15	1,499 13	3 76	-21 02	21 35	2 00	2 00	0 00
1,525 26	7.51	280 15	1,524.19	4 32	-24 16	24.54	2 00	2 00	0.00
Hold 7.51°									
1,600 00	7 51	280 15	1,598 29	6.04	-33 77	34 30	0 00	0 00	0 00
1,700 00	7 51	280 15	1,697 43	8 34	-46 63	47 37	0 00	0 00	0 00
1,800 00	7 51	280 15	1,796 57	10.64	-59 48	60 43	0 00	0 00	0 00
1,900 00	7 51	280 15	1,895 72	12 95	-72 34	73 49	0 00	0 00	0 00
2,000 00	7 51	280 15	1,994 86	15 25	-85 20	86 55	0 00	0 00	0 00
2,100 00	7 51	280 15	2,094 00	17 55	-98.05	99 61	0 00	0 00	0 00
2,200 00	7 51	280.15	2,193 15	19 85	-110 91	112 67	0 00	0 00	0 00
2,300 00	7 51	280 15	2,292 29	22 15	-123 77	125 74	0 00	0 00	0 00
2,400 00	7 51	280 15	2,391 43	24 45	-136 63	138 80	0 00	0 00	0 00
2,500 00	7 51	280 15	2,490 58	26.75	-149 48	151 86	0 00	0 00	0 00
2,600 00	7 51	280 15	2,589 72	29 05	-162 34	164.92	0 00	0 00	0 00
2,700 00	7 51	280 15	2,688 86	31 35	-175 20	177.98	0 00	0 00	0 00
2,800 00	7 51	280 15	2,788 01	33 65	-188 06	191 04	0 00	0.00	0 00
2,900 00	7 51	280.15	2,887 15	35 95	-200 91	204.10	0 00	0 00	0 00
3,000 00	7 51	280 15	2,986 29	38.25	-213 77	217 17	0 00	0 00	0.00
3,100 00	7.51	280 15	3,085 44	40 56	-226 63	230.23	0 00	0 00	0 00
3,200 00	7 51	280 15	3,184 58	42 86	-239 48	243 29	0 00	0.00	0 00
3,300 00	7 51	280 15	3,283 72	45 16	-252 34	256 35	0 00	0 00	0 00
3,400 00	7 51	280 15	3,382 87	47.46	-265 20	269 41	0 00	0 00	0 00
3,500 00	7 51	280 15	3,482 01	49 76	-278 06	282.47	0 00	0 00	0 00
3,600 00	7 51	280 15	3,581 15	52 06	-290 91	295 54	0 00	0 00	0 00
3,700 00	7 51	280 15	3,680 30	54 36	-303 77	308.60	0 00	0 00	0 00
3,800 00	7 51	280 15	3,779 44	56 66	-316 63	321 66	0 00	0 00	0 00
3,900 00	7 51	280 15	3,878 58	58 96	-329 49	334 72	0 00	0 00	0 00
4,000 00	7 51	280 15	3,977 73	61 26	-342 34	347 78	0 00	0.00	0 00
4,022 47	7 51	280 15	4,000 00	61 78	-345 23	350 72	0 00	0 00	0 00
Top of Paddock									
4,100 00	7 51	280 15	4,076 87	63 56	-355 20	360 84	0 00	0 00	0 00
4,123 33	7.51	280.15	4,100 00	64 10	-358 20	363.89	0 00	0 00	0 00
PBHL-BKU #858									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL-BKU #858 - plan hits target center - Circle (radius 10 00)	0 00	0 00	4,100 00	64.10	-358 20	663,439 80	593,211.20	32° 49' 24 656 N	104° 1' 47 655 W

Database:	EDM 5000 1 Single User Db	**Local Co-ordinate Reference:**	Site Burch Keely Unit #858
Company:	COG Operating LLC	**TVD Reference:**	GL @ 3595 00usft
Project:	Eddy County, NM (NAN27 NME)	**MD Reference:**	GL @ 3595 00usft
Site:	Burch Keely Unit #858	**North Reference:**	Grid
Well:	Burch Keely Unit #858	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2 - 7-7/8" Hole		

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,050 00	1,050 00	8-5/8" Casing	8-5/8	12-1/4

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,022 47	4,000 00	Top of Paddock		0 00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
1,150 00	1,150 00	0 00	0 00	Start Build 2 00°/100'
1,525 26	1,524 19	4 32	-24 16	Hold 7 51°

CONCHO

Scientific Drilling

T G M

Azimuths to Grid North
True North -0 17°
Magnetic North 7 57°

Magnetic Field
Strength 48835 2snT
Dip Angle 60 64°
Date: 05/09/2012
Model: IGRF2010

To convert Magnetic North to Grid, Add 7 57°
To convert True North to Grid, Subtract 0 17°

Burch Keely Unit #858
Eddy County, NM (NAN27 NME)
Northing: (Y) 663375.70
Easting: (X) 593569.40
Plan #2 - 7-7/8" Hole

WELL DETAILS: Burch Keely Unit #858

Ground Level 3595.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0 00	0 00	663375 70	593569 40	32° 49' 24 011 N	104° 1' 43 460 W

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	1150 00	0 00	0 00	1150 00	0 00	0 00	0.00	0 00	0 00	
3	1525 26	7 51	280 15	1524 19	4 32	-24 16	2 00	280 15	24 54	
4	4123 33	7 51	280 15	4100 00	64 10	-358 20	0 00	0.00	363 89	PBHL-BKU #858

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL-BKU #858 - plan hits target center	4100 00	64 10	-358 20	663439 80	593211 282° 49' 24.656 N		104° 1' 47 655 W

SITE DETAILS: Burch Keely Unit #858

Site Centre Northing 663375 70
Easting 593569 40

Positional Uncertainty 0 00
Convergence 0 17
Local North Grid

PROJECT DETAILS: Eddy County, NM (NAN27 NME)

Geodetic System US State Plane 1927 (Exact solution)
Datum NAD 1927 (NADCON CONUS)
Ellipsoid Clarke 1866
Zone New Mexico East 3001

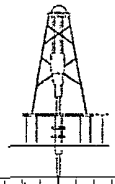
System Datum Mean Sea Level

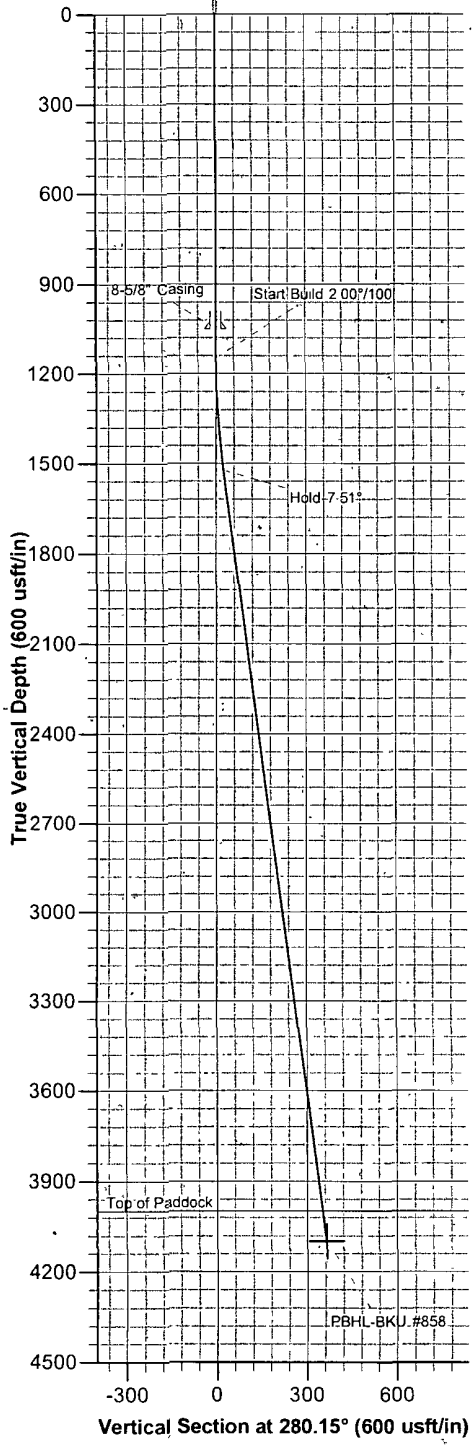
FORMATION TOP DETAILS

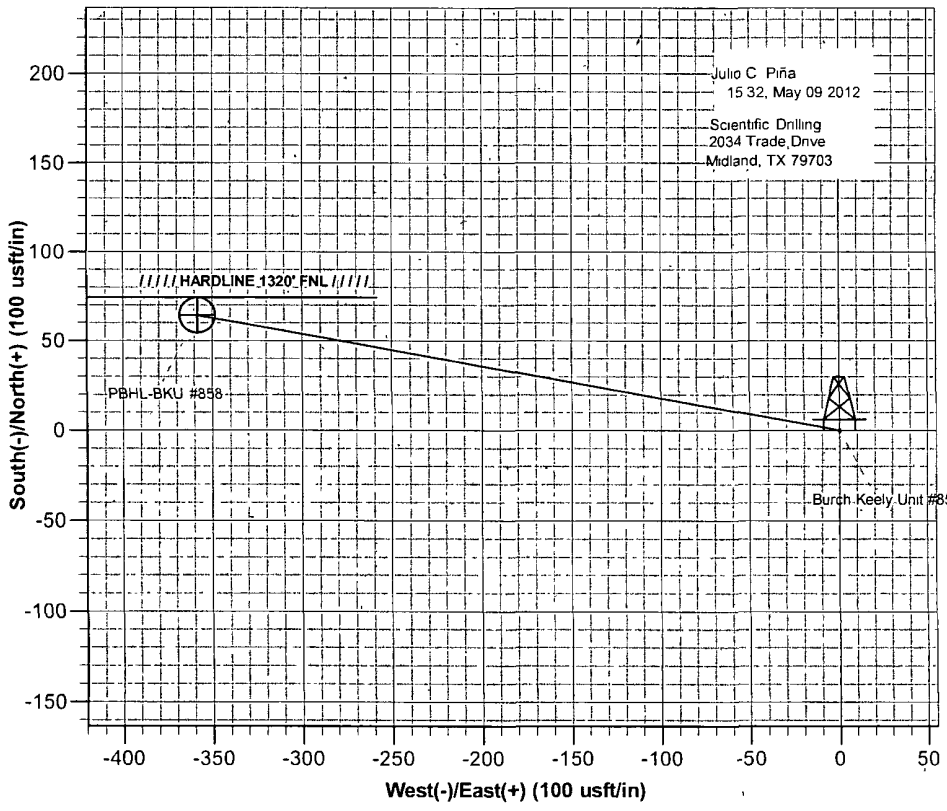
TVDPath	MDPath	Formation	DipAngle	DipDir
4000 00	4022 47	Top of Paddock	0 00	

LEGEND

Plan #2 - 7-7/8" Hole







COG OPERATING LLC
550 West Texas, Suite 1300
Midland, TX 79701

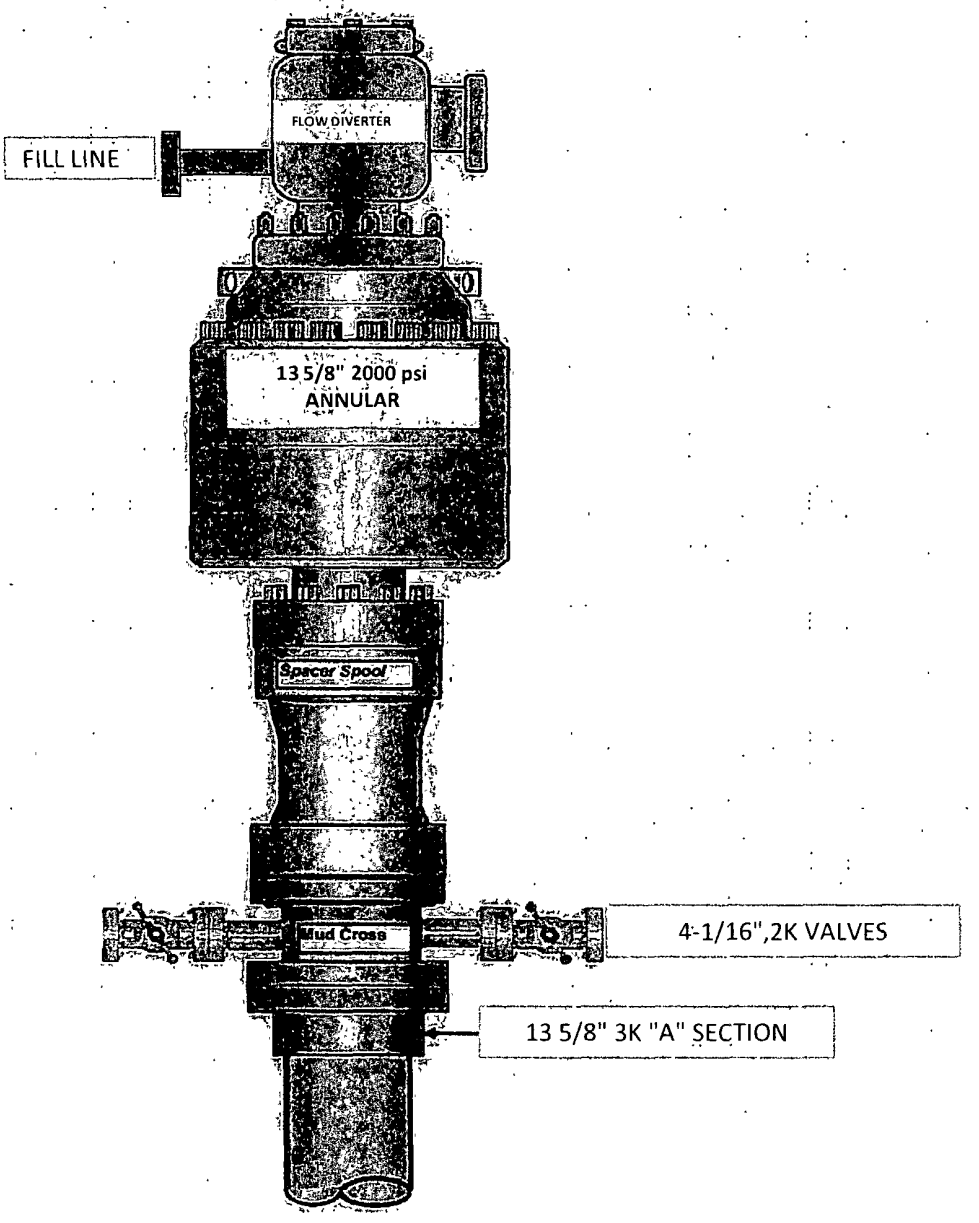
DIRECTIONAL PLAN VARIANCE REQUEST

Burch Keely Unit #858
EDDY, NM

SHL	1395 FNL, 2338 FWL	Sec 24, T17S, R29E, Unit F
BHL	1320 FNL, 1980 FWL	Sec 24, T17S, R29E, Unit F

COG Operating LLC, as Operator, desires that the APD reflect the footages as stated on the surveyor's plat. However, Operator also desires to avoid inadvertently drilling the well to a non-standard location. Therefore, due to the proximity of the plat bottom hole location to the pro-ration unit hard line(s), the attached directional plan is designed to avoid the hard lines by as much as fifty feet; said fifty feet being in either (or both) the north-south and/or east-west directions as applicable.

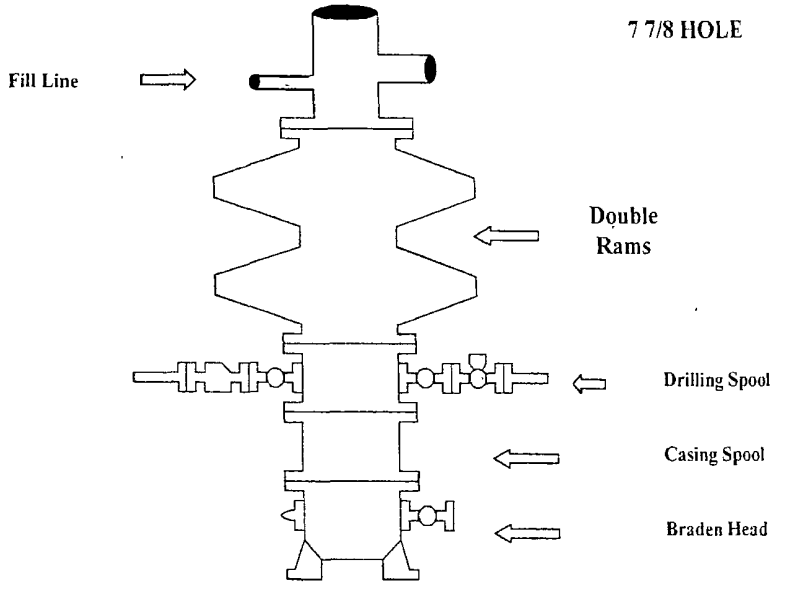
13 5/8" 2K ANNULAR



COG Operating LLC

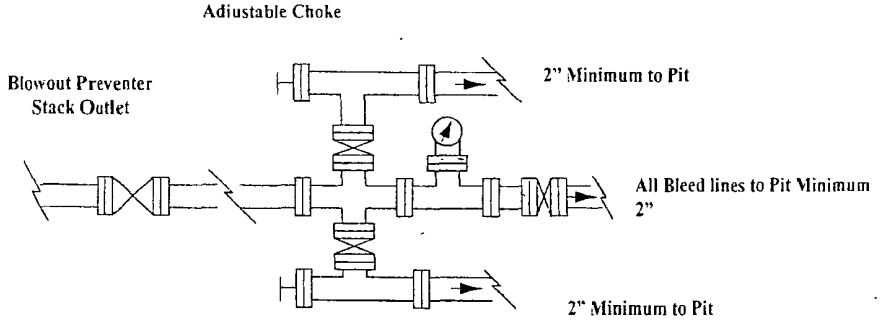
Exhibit #9

BOPE and Choke Schematic



Minimum 4" Nominal choke and kill lines

Choke Manifold Requirement (2000 psi WP)
No Annular Required



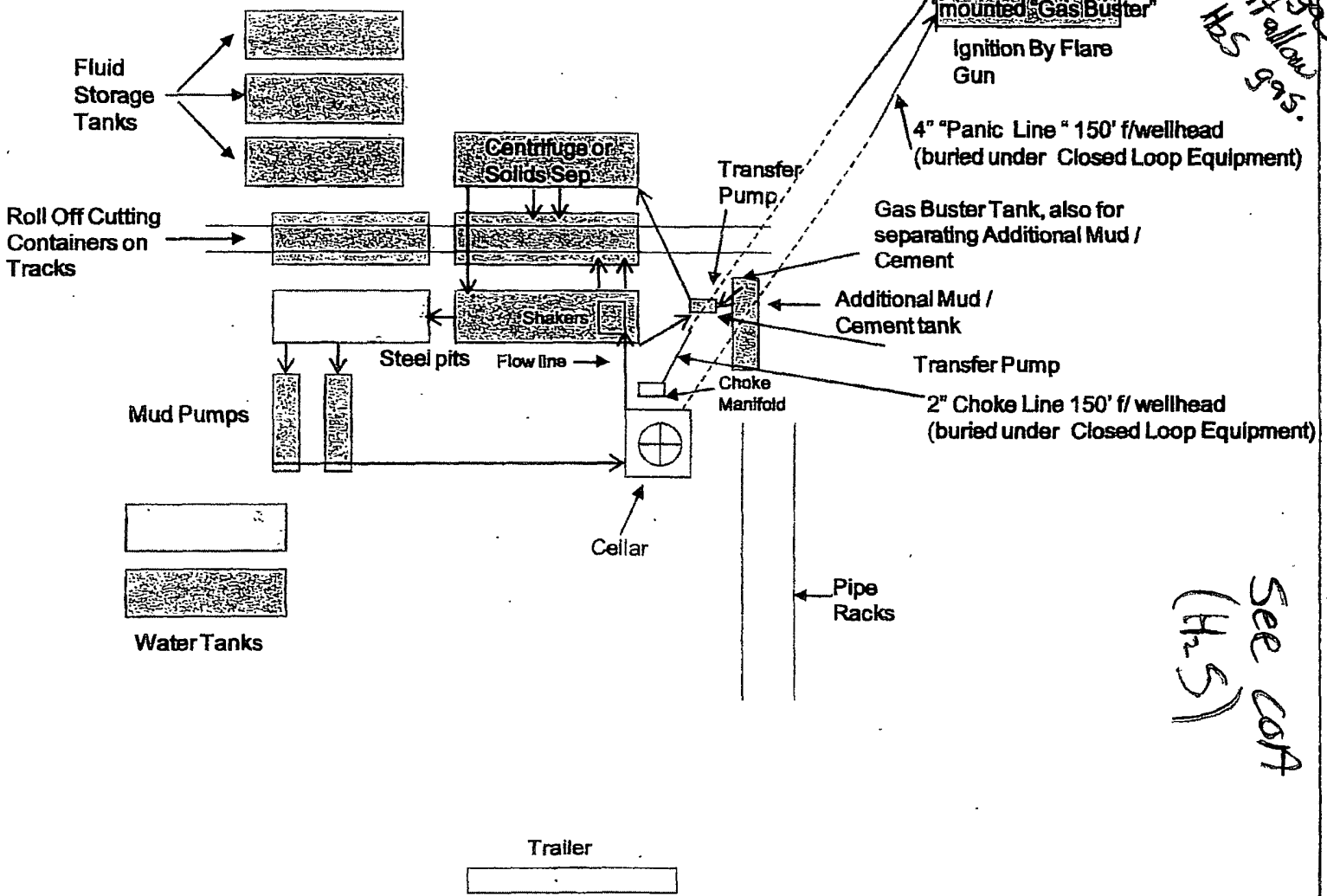
Adjustable Choke
(or Positive)

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



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.

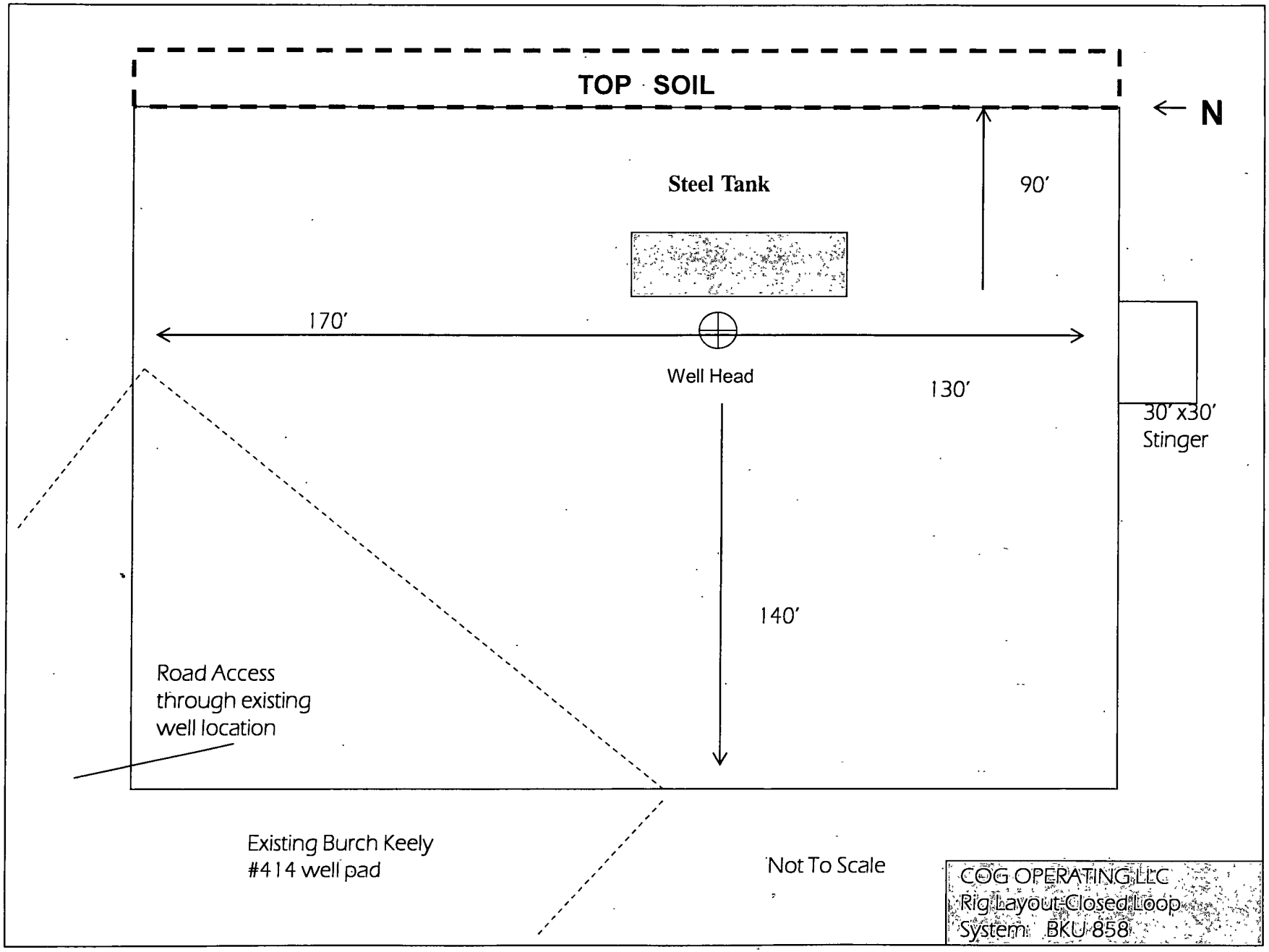
Additional tank is used to capture unused drilling fluid or cement returns from casing jobs.

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)

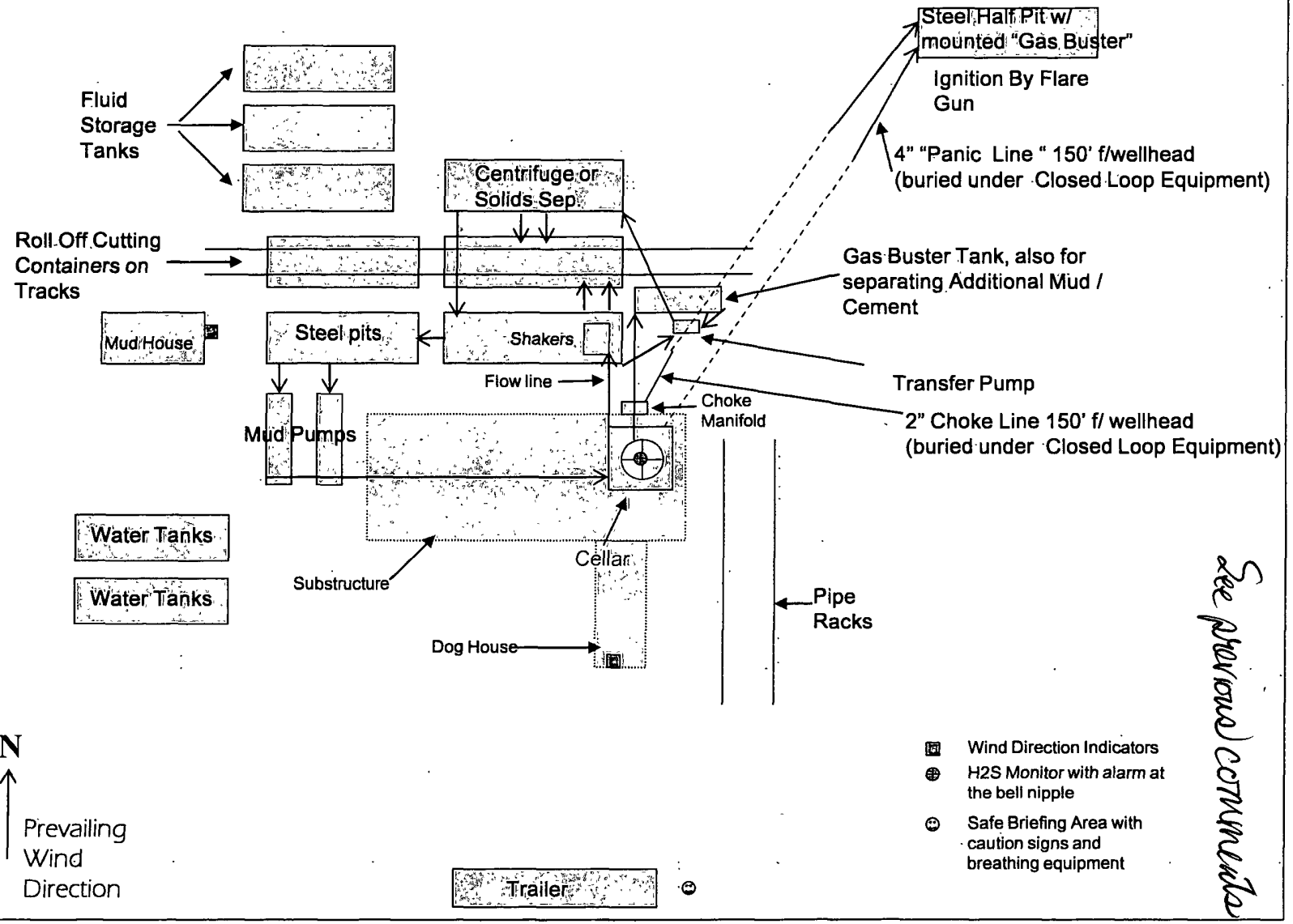
dependent upon which rig is available to drill this well.


TOP SOIL
N
Steel Tank
90'
170'
Well Head
130'
30' x30'
Stinger
140'
Road Access
through existing
well location
Existing Burch Keely
#414 well pad
Not To Scale
COG OPERATING LLC
Rig Layout Closed Loop
System BKU 858

COG Operating LLC

EXHIBIT 8

Drilling Location - H2S Safety Equipment Diagram



See previous comments

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 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

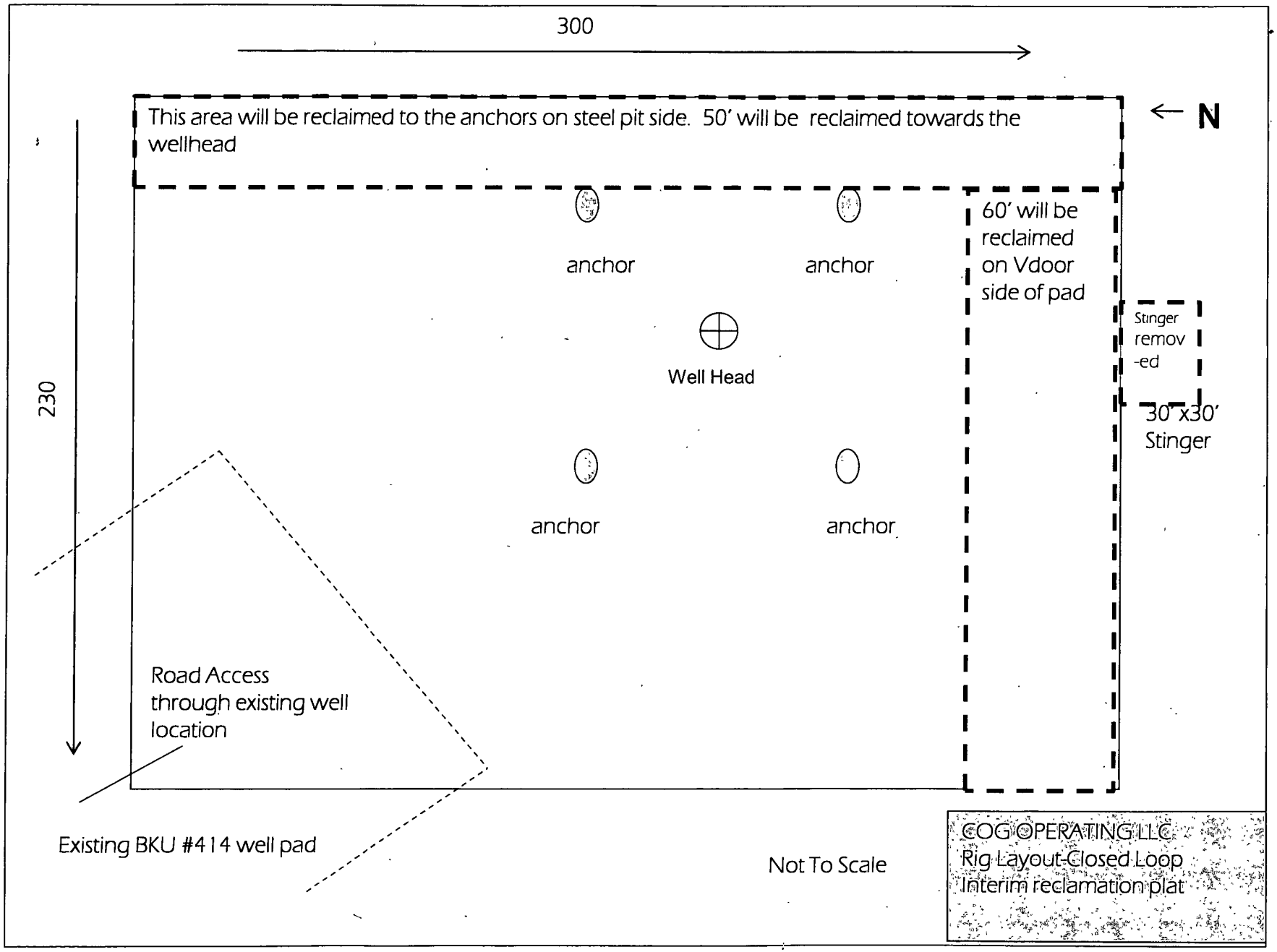
AUTHORIZED PERSONNEL ONLY

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


300
This area will be reclaimed to the anchors on steel pit side. 50' will be reclaimed towards the wellhead
N
60' will be reclaimed on Vdoor side of pad
anchor
anchor
Well Head
Stinger removed
30' x30' Stinger
230
anchor
anchor
Road Access through existing well location
Existing BKU #414 well pad
Not To Scale
COG OPERATING LLC
Rig Layout-Closed Loop
Interim reclamation plat

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Operating LLC
LEASE NO.:	LC-054406
WELL NAME & NO.:	Burch Keely Unit #858
SURFACE HOLE FOOTAGE:	1395' FNL & 2338' FWL
BOTTOM HOLE FOOTAGE	1330' FNL & 1980' FWL
LOCATION:	Section 24, 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.