11-513

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.
NMLC028793A

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 #824H [308086]

2. Name of Operator
COG Operating LLC [229137]

9 API Well No.
30-015- 39577

3a. Address
550 W. Texas Ave., Suite 1300
Midland, TX 79701

3b Phone No. *(include area code)*
432-685-4384

10 Field and Pool, or Exploratory
Grayburg Jackson; SR-Q-Grbg-SA [28509]

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

At surface **1992' FNL & 330' FWL, Unit E, Lot 2**

At proposed prod. zone **2310' FNL & 330' FEL, Unit H**

11. Sec., T. R. M. or Blk. and Survey or Area
Sec 19 T17S R30E

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
330'	**629.65**	**160**
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
60'	**TVD: 4850' MD: 9191'**	**NMB000740; NMB000215**
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23 Estimated duration
3627' GL	**09/30/2011**	**15 days**

RECEIVED
OCT 28 2011
NMOCD ARTESIA

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
Title: **Permitting Tech**	**Kelly J. Holly**	**07/08/2011**

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
/s/ Don Peterson		OCT 26 2011
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

DISTRICT I
1625 N. FRENCH DR., HOBBS, NM 88240
DISTRICT II
1301 W. GRAND AVENUE, ARTESIA, NM 88210
DISTRICT III
1000 RIO BRAZOS RD., AZTEC, NM 87410
DISTRICT IV
11885 S. ST. FRANCIS DR., SANTA FE, NM 87505

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 July 16, 2010
Submit to Appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015- 39577	28509	GRAYBURG JACKSON; SR-Q-G-SA

Property Code	Property Name	Well Number
308086	BURCH KEELY UNIT	824H

OGRID No.	Operator Name	Elevation
229137	COG OPERATING, LLC	3624'

Surface Location

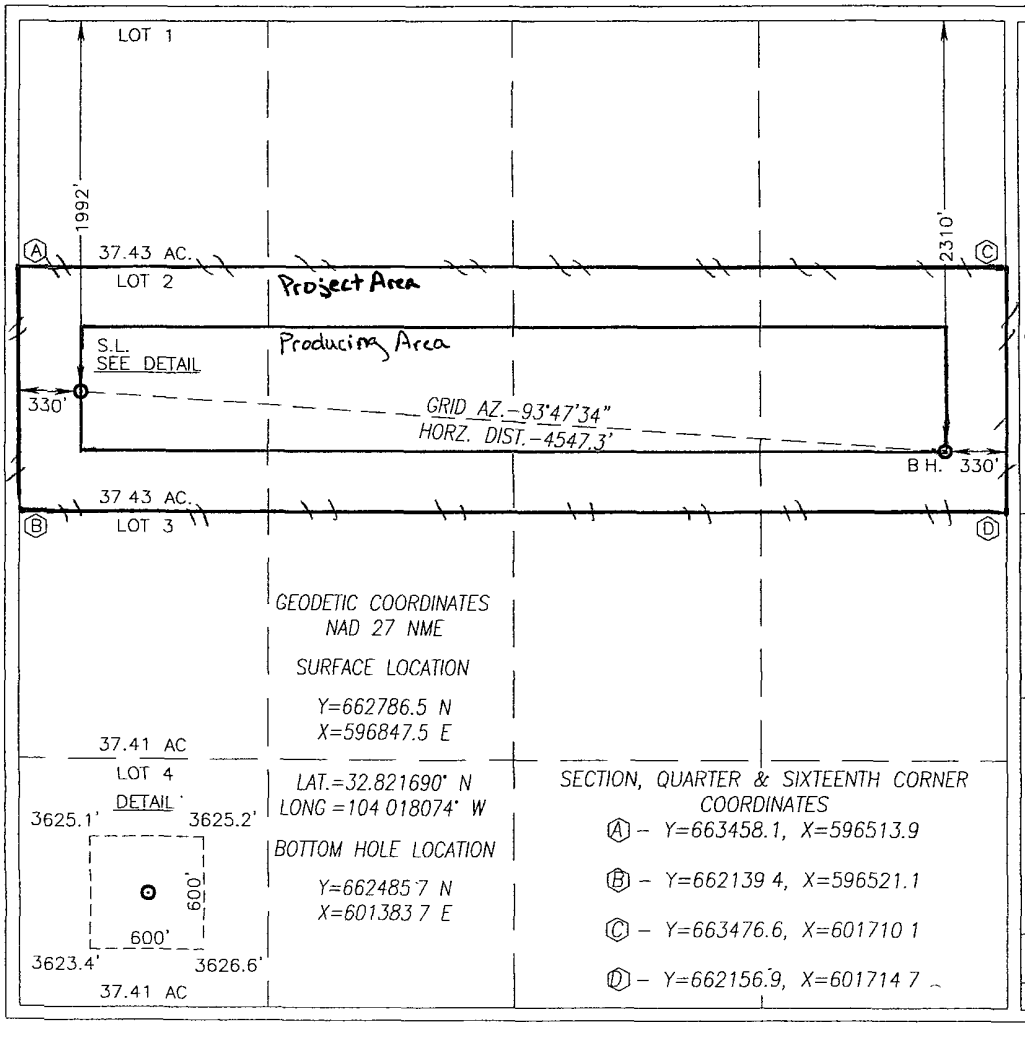
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
2	19	17-S	30-E		1992	NORTH	330	WEST	EDDY

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
H	19	17-S	30-E		2310	NORTH	330	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
157.43			

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



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.

Robyn Odom 8/19/2011
Signature Date

Robyn 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.

JULY 15, 2011
Date of Survey

Signature & Seal of Professional Surveyor:

GARY G. EIDSON NEW MEXICO 12641 REGISTERED PROFESSIONAL SURVEYOR

7/30/11

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

LA REV: 7/20/11 JWSC W.O.: 11.11.1492

ATTACHMENT TO FORM 3160-3
COG Operating, LLC
Burch Keely Unit Federal #824H
SHL: 1992' FNL & 330' FWL, Unit 2
BHL: 2310' FNL & 330' FEL, Unit H
Sec 19, T17S, R30E
Eddy County, NM

1. Proration Unit Spacing: 160 Acres

2. Ground Elevation: 3624'

3. Proposed Depths: Horizontal TVD = 4,850', MD = 9,191'

4. Estimated tops of geological markers:

Quaternary	Surface
Rustler	284'
Top of Salt	500'
Base of Salt	1000'
Yates	1250'
Seven Rivers	1475'
Queen	2150'
Grayburg	2550'
San Andres	2875'
Glorieta	4300'
Paddock	4400'
Blinebry	4800'
Tubb	5900'

5. Possible mineral bearing formations:

Water Sand	150'	Fresh Water
Grayburg	2550'	Oil/Gas
San Andres	2875'	Oil/Gas
Glorieta	4300'	Oil/Gas
Paddock	4400'	Oil/Gas
Blinebry	4800'	Oil/Gas
Tubb	5900'	Oil/Gas

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to ~~450~~ 425' 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~~ 1325' 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 (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

6. Casing Program - **Proposed**

Hole size	Interval	OD of Casing	Weight	Cond.	Collar	Grade
17-1/2"	0' - +/-~~450'~~ 255	13-3/8"	48#	New	STC	H-40 or J/K-55
Collapse sf – 3.87, Burst sf – 8.70, Tension sf – 14.91						
12-1/4"	0' - +/-~~1350'~~ 1170	9-5/8"	36#	New	STC	J/K-55
Collapse sf – 2.88, Burst sf – 5.01, Tension sf – 8.11						
8-3/4"	0' – 9191'	5-1/2"	17#	New	LTC	L-80
Collapse sf – 2.74, Burst sf – 3.37, Tension sf – 4.22						

See COA

7. Cement Program

13 3/8" Surface Csg: Set at +/- 450'MD, Lead Slurry: 450sx Class "C" w/ 2% CaCl2 & .25 pps CF, 1.32 yield. 90% excess, calculated to surface.

9 5/8" Intrmd. Csg: Set at +/- 1350'MD. **Single Stage:** Lead Slurry: 300 sx 50:50:10:C:Poz:Gel w/ 5% salt, 5 pps LCM-1 .25 pps CF, 2.45 yield. Tail Slurry: 200 sx Class "C" w/ 2% CaCl2, 1.32 yield. 194% excess, calculated to surface.

Multi Stage: Stage 1: 200 sx Class "C" w/ 2% CaCl2, 1.32 yield. 194% excess. **Stage 2:** 300 sx 50:50:10:C:Poz:Gel w/ 5% salt, 5 pps LCM-1 .25 pps CF, 2.45 yield, back to surface, 176% excess; assumption for tool is lost circulation. Multi stage tool to be set at approximately, depending on hole conditions, 500' (50' below the surface casing). Cement volumes will be adjusted proportionately for depth changes of multi stage tool.

See COA

Pilot Hole Cement: 8-3/4" hole +/- 4250'-~~6000'~~ 5000 See COA, 650sx Class C w/ .75% CFR-3, .45% HR-601, .3% Halad-22, 16.8 ppg, 1.02 yd, 12% excess, calculated to surface. Cement volume to be adjusted proportionally with pilot hole td.

5 1/2" Production Csg: Set at +/- 9,191'MD. **Single Stage:** Lead Slurry: 500 sx 35:65:6:C:Poz:Gel w/ 5% salt, 5 pps LCM, .2% SMS, .3% FL-52A, .125 pps CF, 2.01 yd. Inter. Slurry: 400 sx 50:50:2:C:Poz:Gel w/ 5% salt, 3 pps LCM, .6% SMS, 1% FL-25, 1% BA-58, .125 pps CF, .3% FL-52A; 1.37 yield Tail Slurry: 450 sx Class "H" SOLUCEM-H w/ .7% HR-601, 2.62 yield 20% excess in open hole, calculated to surface. **This is a minimum volume and will be adjusted up after caliper is run.**

Multi Stage: Stage 1: (Assumed TD of 9191'MD to DV at 2900') Lead Slurry: 400 sx 50:50:2:C:Poz:Gel w/ 5% salt, 3 pps LCM, .6% SMS, 1% FL-25, 1% BA-58, .125 pps CF, .3% FL-52A; 1.37 yield Tail Slurry: 450 sx Class "H" SOLUCEM-H w/ .7% HR-601, 2.62 yield; 7% excess. **This is a minimum volume and will be adjusted up after caliper is run. Stage 2:** Lead Slurry: 400 sx 50:50:2:C:Poz:Gel w/ 5% salt, 3 pps LCM, .6% SMS, 1% FL-25, 1% BA-58, .125 pps CF, .3% FL-52A; 1.37 yield. Tail Slurry: 250 sx Class C w/ 0.3% R-3 + 1.5% CD-32, 1.02 yield. 12% 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.**

See COA

Multi stage tool to be set at approximately, depending on hole conditions, 2900'. 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" will be used during the drilling of the well. The BOP will be nipped up on the 13 3/8" surface casing with BOP equipment and tested to 2000 psi. After setting 9-5/8" the BOP will then be nipped up on the 9-5/8" intermediate casing and tested by a third party to 2000 psi and used continuously until total depth is reached. 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' - 450'	8.5	28	NC	Fresh water native mud w/ paper for seepage and sweeps. Lime for PH.
450'- 1350'	10	30	NC	Brine mud, lime for PH and paper for seepage and sweeps.
1350'- 9191'	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:

5000 → See COM

Reduce hole size at 4250' to 7 7/8", drill pilot hole to 6000'. After evaluation, plug back pilot hole to 4,250'. Drill 8 ¾" hole and kick off at +/- 4373', building curve over +/- 750' to horizontal at 4850' TVD. Drill horizontal section in a Easterly direction for +/-4068' lateral to TD at +/-9191' MD, 4850' TVD. Run 5-1/2" production casing in Open hole lateral and cement 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.

12. Logging, Testing and Coring Program: See COA

    A. The evaluation program will consist of PEX, LDT-CNL-GR, HRLA_GR, FMI, Rotary Cores and will be ran from T.D. in vertical pilot hole to 8 5/8" casing shoe..

    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 5 ½" production casing has been cemented at TD based on drill shows and log evaluation.

13. Abnormal Conditions, Pressures, Temperatures and Potential Hazards: incorrect for 6000'

    No abnormal pressures or temperatures are anticipated. The estimated bottom hole at TD is 90 degrees and estimated maximum bottom hole pressure is 1800 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 ***October 30, 2011*** with drilling and completion operations lasting approximately ***90*** days.

CONCHO

COG Operating LLC

Eddy County, NM (NAN27 NME)
Burch Keely Unit #824H
Burch Keely Unit #824H

OH

Plan: Plan #3 - 7-7/8" Hole
SHL = 1992' FNL & 330' FWL
BHL = 2310' FNL & 330' FEL

Standard Planning Report

24 August, 2011

Scientific Drilling
Directional Drilling Operations

Database:	EDM-Julio	**Local Co-ordinate Reference:**	Site Burch Keely Unit #824H
Company:	COG Operating LLC	**TVD Reference:**	GL Elev @ 3624 00usft
Project:	Eddy County, NM (NAN27 NME)	**MD Reference:**	GL Elev @ 3624 00usft
Site:	Burch Keely Unit #824H	**North Reference:**	Grid
Well:	Burch Keely Unit #824H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3 - 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 #824H

Site Position:		**Northing:**	662,786 50 usft	**Latitude:**	32° 49' 18 086 N
From:	Map	**Easting:**	596,847.50 usft	**Longitude:**	104° 1' 5 065 W
Position Uncertainty:	0 00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0 17 °

Well Burch Keely Unit #824H

Well Position	**+N/-S**	0.00 usft	**Northing:**	662,786 50 usft	**Latitude:**	32° 49' 18 086 N
	+E/-W	0 00 usft	**Easting:**	596,847 50 usft	**Longitude:**	104° 1' 5 065 W
Position Uncertainty		0 00 usft	**Wellhead Elevation:**		**Ground Level:**	3,624 00 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2011/08/24	7 81	60 66	48,906

Design Plan #3 - 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	93.79

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	
4,372 54	0 00	0 00	4,372 54	0 00	0 00	0 00	0 00	0 00	0 00	
5,122 54	90 00	93 79	4,850 00	-31 59	476 42	12 00	12 00	0 00	93.79	
9,191 23	90 00	93 79	4,850 00	-300 80	4,536 20	0 00	0 00	0 00	0 00	PBHL-BKU #824H

Database:	EDM-Julio	**Local Co-ordinate Reference:**	Site Burch Keely Unit #824H
Company:	COG Operating LLC	**TVD Reference:**	GL Elev @ 3624.00usft
Project:	Eddy County, NM (NAN27 NME)	**MD Reference:**	GL Elev @ 3624.00usft
Site:	Burch Keely Unit #824H	**North Reference:**	Grid
Well:	Burch Keely Unit #824H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3 - 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
4,372.54	0.00	0.00	4,372.54	0.00	0.00	0.00	0.00	0.00	0.00
KOP Start Build 12.00°/100'									
4,400.00	3.30	93.79	4,399.98	-0.05	0.79	0.79	12.00	12.00	0.00
4,500.00	15.30	93.79	4,498.49	-1.12	16.88	16.91	12.00	12.00	0.00
4,600.00	27.30	93.79	4,591.49	-3.52	53.05	53.17	12.00	12.00	0.00
4,700.00	39.30	93.79	4,674.93	-7.14	107.72	107.96	12.00	12.00	0.00
4,800.00	51.30	93.79	4,745.14	-11.84	178.51	178.91	12.00	12.00	0.00
4,900.00	63.30	93.79	4,799.07	-17.39	262.32	262.90	12.00	12.00	0.00
5,000.00	75.30	93.79	4,834.36	-23.57	355.49	356.27	12.00	12.00	0.00
5,100.00	87.30	93.79	4,849.47	-30.10	453.94	454.94	12.00	12.00	0.00
5,122.54	90.00	93.79	4,850.00	-31.59	476.42	477.47	12.00	12.00	0.00
EOC hold 90.00°									
5,200.00	90.00	93.79	4,850.00	-36.72	553.71	554.93	0.00	0.00	0.00
5,300.00	90.00	93.79	4,850.00	-43.33	653.49	654.93	0.00	0.00	0.00
5,400.00	90.00	93.79	4,850.00	-49.95	753.28	754.93	0.00	0.00	0.00
5,500.00	90.00	93.79	4,850.00	-56.57	853.06	854.93	0.00	0.00	0.00
5,600.00	90.00	93.79	4,850.00	-63.18	952.84	954.93	0.00	0.00	0.00
5,700.00	90.00	93.79	4,850.00	-69.80	1,052.62	1,054.93	0.00	0.00	0.00
5,800.00	90.00	93.79	4,850.00	-76.42	1,152.40	1,154.93	0.00	0.00	0.00
5,900.00	90.00	93.79	4,850.00	-83.03	1,252.18	1,254.93	0.00	0.00	0.00
6,000.00	90.00	93.79	4,850.00	-89.65	1,351.96	1,354.93	0.00	0.00	0.00
6,100.00	90.00	93.79	4,850.00	-96.27	1,451.74	1,454.93	0.00	0.00	0.00
6,200.00	90.00	93.79	4,850.00	-102.88	1,551.52	1,554.93	0.00	0.00	0.00
6,300.00	90.00	93.79	4,850.00	-109.50	1,651.30	1,654.93	0.00	0.00	0.00
6,400.00	90.00	93.79	4,850.00	-116.12	1,751.08	1,754.93	0.00	0.00	0.00
6,500.00	90.00	93.79	4,850.00	-122.73	1,850.86	1,854.93	0.00	0.00	0.00
6,600.00	90.00	93.79	4,850.00	-129.35	1,950.65	1,954.93	0.00	0.00	0.00
6,700.00	90.00	93.79	4,850.00	-135.97	2,050.43	2,054.93	0.00	0.00	0.00
6,800.00	90.00	93.79	4,850.00	-142.58	2,150.21	2,154.93	0.00	0.00	0.00
6,900.00	90.00	93.79	4,850.00	-149.20	2,249.99	2,254.93	0.00	0.00	0.00
7,000.00	90.00	93.79	4,850.00	-155.82	2,349.77	2,354.93	0.00	0.00	0.00
7,100.00	90.00	93.79	4,850.00	-162.43	2,449.55	2,454.93	0.00	0.00	0.00
7,200.00	90.00	93.79	4,850.00	-169.05	2,549.33	2,554.93	0.00	0.00	0.00
7,300.00	90.00	93.79	4,850.00	-175.67	2,649.11	2,654.93	0.00	0.00	0.00
7,400.00	90.00	93.79	4,850.00	-182.28	2,748.89	2,754.93	0.00	0.00	0.00
7,500.00	90.00	93.79	4,850.00	-188.90	2,848.67	2,854.93	0.00	0.00	0.00
7,600.00	90.00	93.79	4,850.00	-195.51	2,948.45	2,954.93	0.00	0.00	0.00
7,700.00	90.00	93.79	4,850.00	-202.13	3,048.24	3,054.93	0.00	0.00	0.00
7,800.00	90.00	93.79	4,850.00	-208.75	3,148.02	3,154.93	0.00	0.00	0.00
7,900.00	90.00	93.79	4,850.00	-215.36	3,247.80	3,254.93	0.00	0.00	0.00
8,000.00	90.00	93.79	4,850.00	-221.98	3,347.58	3,354.93	0.00	0.00	0.00
8,100.00	90.00	93.79	4,850.00	-228.60	3,447.36	3,454.93	0.00	0.00	0.00
8,200.00	90.00	93.79	4,850.00	-235.21	3,547.14	3,554.93	0.00	0.00	0.00
8,300.00	90.00	93.79	4,850.00	-241.83	3,646.92	3,654.93	0.00	0.00	0.00
8,400.00	90.00	93.79	4,850.00	-248.45	3,746.70	3,754.93	0.00	0.00	0.00
8,500.00	90.00	93.79	4,850.00	-255.06	3,846.48	3,854.93	0.00	0.00	0.00
8,600.00	90.00	93.79	4,850.00	-261.68	3,946.26	3,954.93	0.00	0.00	0.00
8,700.00	90.00	93.79	4,850.00	-268.30	4,046.04	4,054.93	0.00	0.00	0.00
8,800.00	90.00	93.79	4,850.00	-274.91	4,145.82	4,154.93	0.00	0.00	0.00
8,900.00	90.00	93.79	4,850.00	-281.53	4,245.61	4,254.93	0.00	0.00	0.00
9,000.00	90.00	93.79	4,850.00	-288.15	4,345.39	4,354.93	0.00	0.00	0.00
9,100.00	90.00	93.79	4,850.00	-294.76	4,445.17	4,454.93	0.00	0.00	0.00
9,191.23	90.00	93.79	4,850.00	-300.80	4,536.20	4,546.16	0.00	0.00	0.00

Database:	EDM-Julio	**Local Co-ordinate Reference:**	Site Burch Keely Unit #824H
Company:	COG Operating LLC	**TVD Reference:**	GL Elev @ 3624 00usft
Project:	Eddy County, NM (NAN27 NME)	**MD Reference:**	GL Elev @ 3624 00usft
Site:	Burch Keely Unit #824H	**North Reference:**	Grid
Well:	Burch Keely Unit #824H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3 - 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)
PBHL-BKU #824H									

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 #824H - plan hits target center - Point	0 00	0 01	4,850 00	-300 80	4,536 20	662,485 70	601,383 70	32° 49' 14 972 N	104° 0' 11 918 W

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
4,372 54	4,372 54	0 00	0 00	KOP Start Build 12 00°/100'
5,122 54	4,850 00	-31 59	476 42	EOC hold 90 00°

CONCHO

Scientific Drilling for COG Operating LLC
Site: Eddy County, NM (NAN27 NME)
Well: Burch Keely Unit #824H
Wellbore: OH
Design: Plan #3 - 7-7/8" Hole

Scientific Drilling
Directional Drilling Operations

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	4372.54	0 00	0.00	4372.54	0 00	0.00	0 00	0.00	0 00	
3	5122.54	90 00	93 79	4850.00	-31 59	476 42	12 00	93.79	477.46	
4	9191.23	90 00	93.79	4850.00	-300.80	4536.20	0.00	0.00	4546.16	PBHL-BKU #824H

Plan: Plan #3 - 7-7/8" Hole (Burch Keely Unit #824H/OH)

Created By: Julio Pina Date: 24-Aug-11

Checked. _____ Date: _____

Reviewed. _____ Date _____

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL-BKU #824H	4850 00	-300 80	4536 20	662485.70	601383 70	32°49' 14.972 N	104°0' 11.918 W	Point

AZIMUTH CORRECTIONS
ALL AZIMUTHS MUST BE CORRECTED TO GRID
GRID CORRECTIONS MUST BE APPLIED BEFORE PLOTTING
To convert a Magnetic Direction to a Grid Direction, Add 7.64°
To convert a True Direction to a Grid Direction, Subtract 0.17°

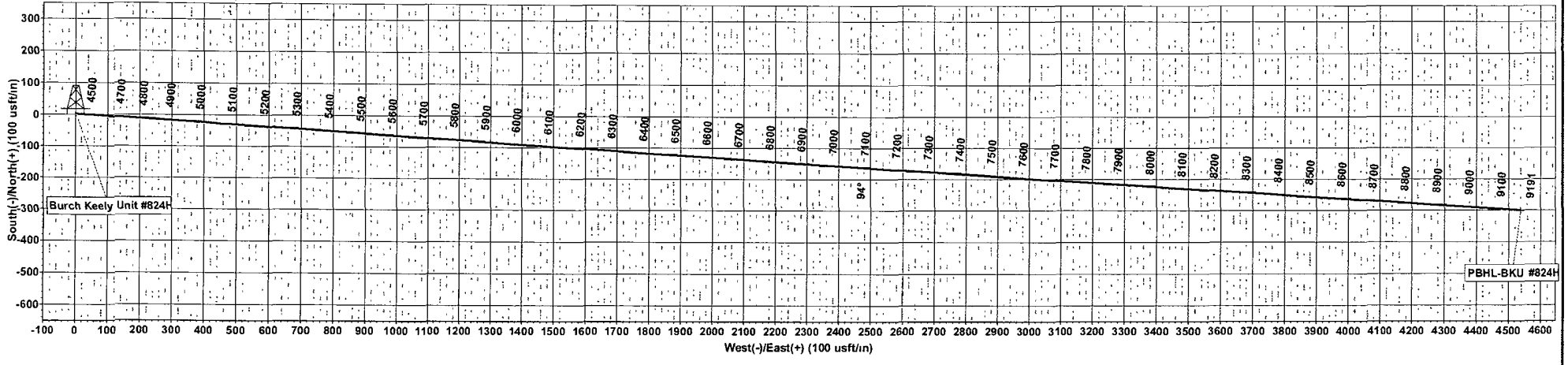
PROJECT DETAILS: Eddy County, NM (NAN27 NME)

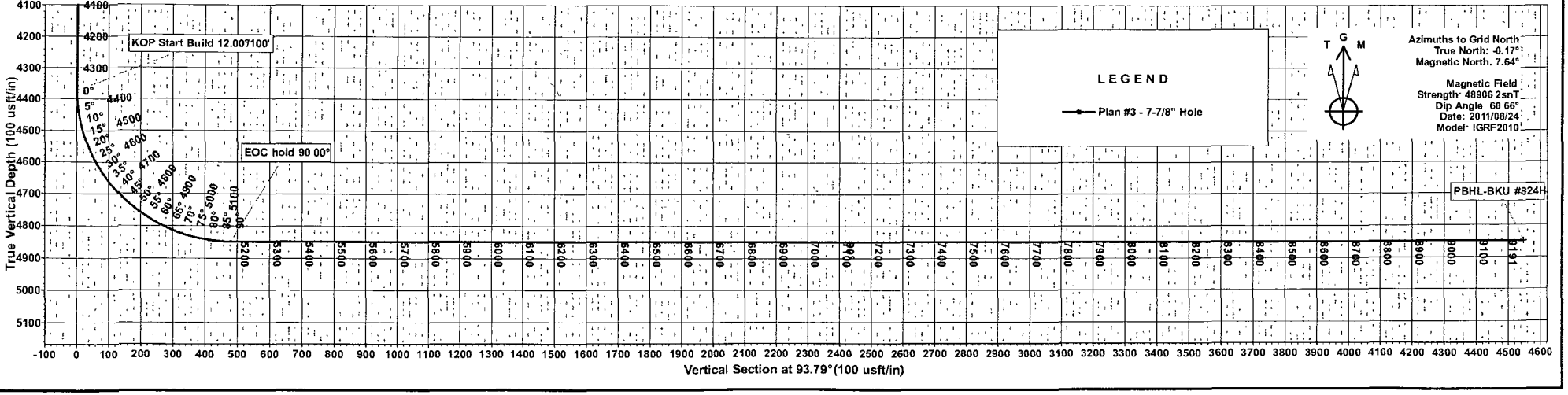
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum Mean Sea Level

WELL DETAILS: Burch Keely Unit #824H

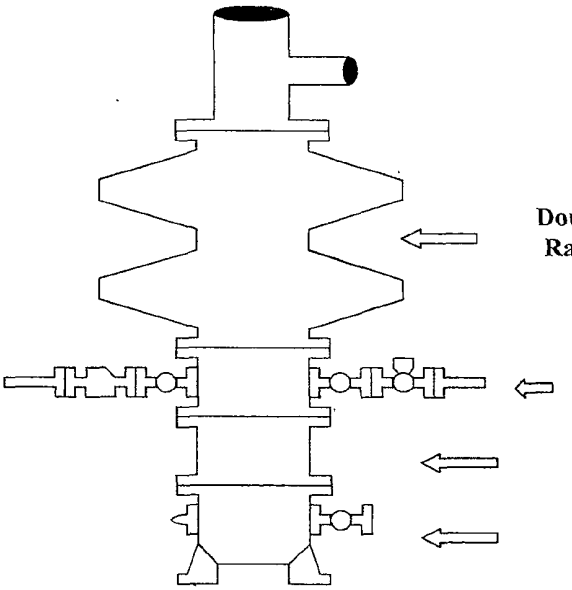
Ground Level. 3624.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0 00	0.00	662786.50	596847 50	32°49' 18 086 N	104°1' 5 065 W	



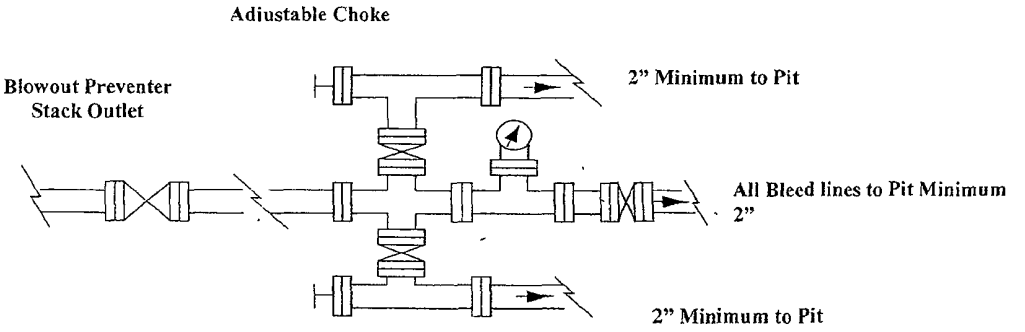


COG Operating LLC
Exhibit #9
BOPE and Choke Schematic



Minimum 4" Nominal choke and kill lines

Choke Manifold Requirement (2000 psi WP)
No Annular Required



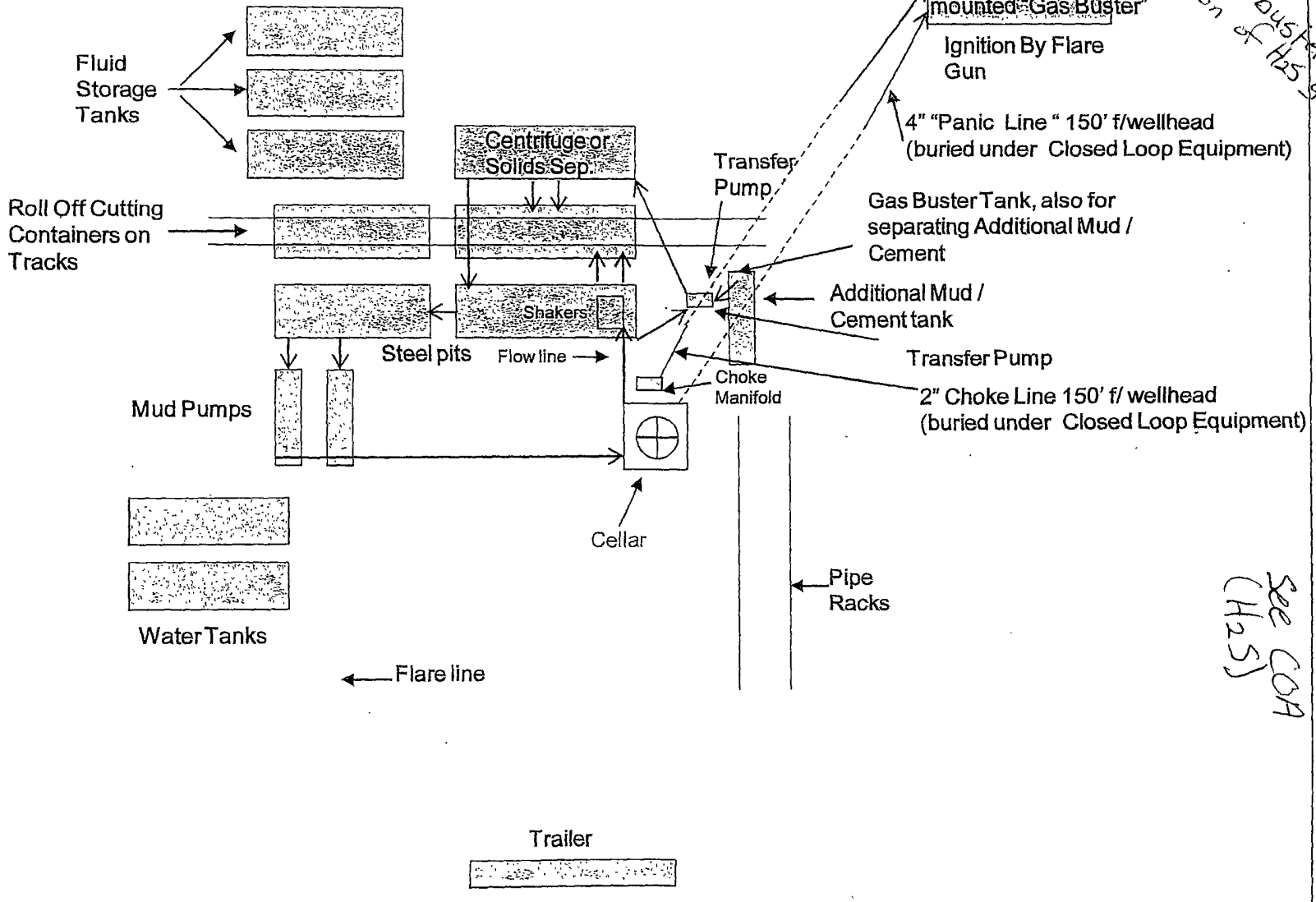
Adjustable Choke
(or Positive)

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



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.

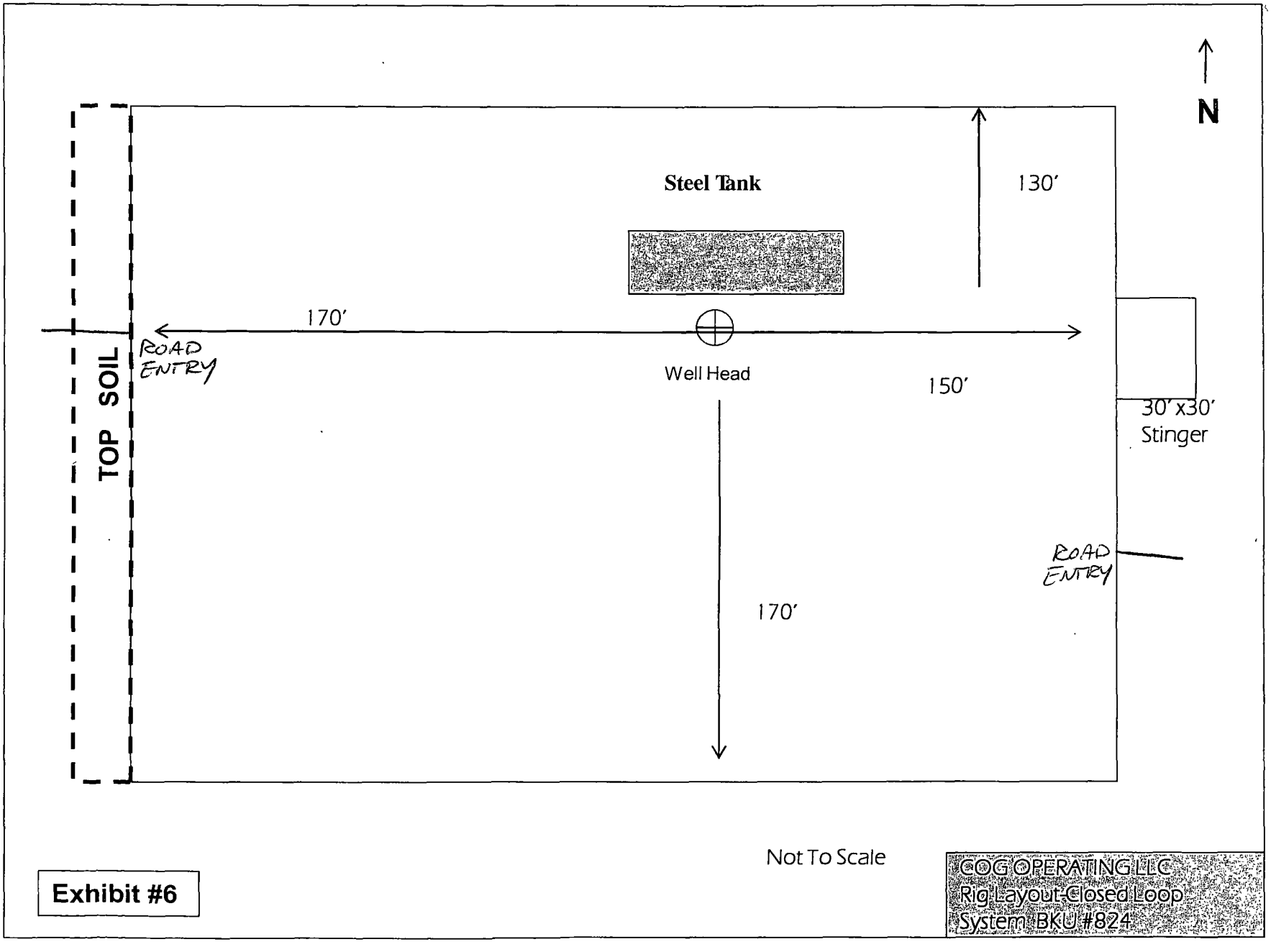
Additional tank is used to capture unused drilling fluid or cement returns from casing jobs.

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.


N
Steel Tank
130'
170'
ROAD ENTRY
Well Head
150'
30' x30' Stinger
TOP SOIL
ROAD ENTRY
170'
Not To Scale
Exhibit #6
COG OPERATING LLC
Rig Layout-Closed Loop System BKU #824