ATS-10-645

HOBBS OCD

JUN 15 2011

RECEIVED

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-029405B

6 If Indian, Allotee or Tribe Name
N/A

7 If Unit or CA Agreement, Name and No
N/A

1a. Type of work: ☑ DRILL ☐ REENTER

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

8 Lease Name and Well No. (302498)
G C FEDERAL #47

2 Name of Operator
COG Operating LLC (229137)

9 API Well No.
30-025- 40165

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

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

10 Field and Pool, or Exploratory
Maljamar; Yeso, West 44500

4 Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface **1505' FSL & 200' FEL, Unit I**
At proposed prod zone **990' FSL & 330 FEL, Unit P**

UNORTHODOX LOCATION

11 Sec , T R M or Blk and Survey or Area
Sec 20, T17S, R32E

14 Distance in miles and direction from nearest town or post office*
3 miles south of Maljamar NM

12 County or Parish
Lea

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
200'	**1602**	**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
200'	**TVD: 7100' MD: 7135'**	**NMB000215**

21 Elevations (Show whether DF, KDB, RT, GL, etc)	22 Approximate date work will start*	23 Estimated duration
4003 ' GL	**03/31/2011**	**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
Kelly	**Kelly J. Holly**	**01/06/2011**

Title
Permitting Tech

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
/s/ Don Peterson		JUN - 2 2011

Title	Office
FIELD MANAGER	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)

KZ 06/21/11

SEE ATTACHED FOR CONDITIONS OF APPROVAL

APPROVAL SUBJECT TO GENERAL REQUIREMENTS AND SPECIAL STIPULATIONS ATTACHED

Roswell Controlled Water Basin

JUN 22 2011

COG Operating LLC
Master Drilling Plan Revised 1-31-11
West Maljamar; Yeso, West
Use for Sections 3-35, T17S, R32E
Lea County, NM

MASTER DRILLING PROGRAM

1. Geologic Name of Surface Formation

Quaternary

2. Estimated Tops of Important Geologic Markers:

Quaternary	Surface
Rustler	680'
Top of Salt	900'
Base of Salt	1700'
Yates	2010'
Seven Rivers	2375'
Queen	2980'
Grayburg	3355'
San Andres	3700'
Glorietta	5260'
Paddock	5310'
Blinebry	5870'
Tubb	6810'

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

Water Sand	150'	Fresh Water
Grayburg	3355'	Oil/Gas
San Andres	3700'	Oil/Gas
Glorietta	5260'	Oil/Gas
Paddock	5310'	Oil/Gas
Blinebry	5870'	Oil/Gas
Tubb	6810'	Oil/Gas

See COA

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to ~~720'~~ 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 ~~2100'~~ and circulating cement, in a single or multi-stage job and/or with an ECP, back to the surface. Any shallower zones above TD, which contain commercial quantities of oil and/or gas, will have cement circulated across them. This will be achieved by cementing, with a single or multi-stage job, the 5 1/2" production casing back 200' into the intermediate casing, to be run at TD. If wellbore conditions arise that require immediate action and/or a change to this program, COG Operating LLC personnel will always react to protect the wellbore and/or the environment.

*

See COA

See COA

4. Casing Program

See COA

Hole Size	Interval	OD Casing	Weight	Grade	Jt., Condition	burst/collapse/tension
17 ½"	0-~~720~~'	13 3/8"	48#	H-40orJ-55	ST&C/New	6.03/2.578/10.32
11"	0-~~2100~~'	8 5/8"	24or32#	J-55	ST&C/New	1.85/1.241/4.78
7 7/8"	0-T.D.	5 1/2"	15.5or17#	J-55orL-80	LT&C/New	1.59/1.463/2.05

See COA

5. Cement Program

13 3/8" Surface Casing:

LEAD Class C, 4% Gel, 2% CaCl2, .25 pps CF, 325 sx, yield-1.75 + TAIL 200 sx w/ 2% CaCl2, 0.25 pps CF, yield-1.32. 133% excess

8 5/8" Intermediate Casing:

11" Hole:

Single Stage: LEAD 50:50:10 C:Poz:Gel w/ 5% Salt +0.25% CF, 375 sx, yield-2.45 + TAIL Class C w/2% CaCl2, 200 sx, yield-1.32, back to surface. 133% excess

Multi-Stage: Stage 1: Class C w/2% CaCl2, 400 sx, yield - 1.32; 48% excess Stage 2: Class C w/2% CaCl2, 200 sx, yield – 1.32, back to surface, 48% excess; assumption for tool is lost circulation. Multi stage tool to be set at approximately, depending on hole conditions, ~~770~~' (50' below the surface casing). Cement volumes will be adjusted proportionately for depth changes of multi stage tool.

*See COA

5 1/2" Production Casing:

Single Stage: LEAD 35:65:6 C:Poz:Gel w/ 5% Salt + 5 pps LCM + 0.2% SMS + 0.3% FL-52A + 0.125 pps CF, 500 sx, yield-2.05 + TAIL 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, 400 sx, yield-1.37, to 200' minimum tie back to intermediate casing. 30% excess back to surface.

See COA

Multi-Stage: Stage 1: (Assumed TD of 7000') 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, 500 sx, yield - 1.37, 13% excess; minimum volume, will be adjusted up after caliper is run. Stage 2: LEAD 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, 450 sx, yield - 1.37, + TAIL Class C w/ 0.3% R-3 + 1.5% CD-32, 250 sx, yield – 1.02 43% excess calculated back to surface. Multi stage tool to be set at approximately, depending on hole conditions, 3500'. 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 *See COA

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.

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:

* See COA

DEPTH	TYPE	WEIGHT	VISCOSITY	WATERLOSS
0-720'	Fresh Water	8.5	28	N.C.
720-2100'	Brine	10	30	N.C.
2100'-TD	Cut Brine	8.7-9.1	29	N.C.

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

8. Auxiliary Well Control and Monitoring Equipment

A. Kelly cock will be kept in the drill string at all times.

B. A full opening drill pipe-stabbing valve with proper drill pipe connections will be on the rig floor at all times.

*

9. Logging, Testing and Coring Program

See COA

A. The electric logging program will consist of GR-Dual Laterolog, Spectral Density, Dual Spaced Neutron, CSNG Log and will be run from TD to 8 5/8" casing shoe.

B. Drill Stem test is not anticipated.

C. No conventional coring is anticipated.

D. Further testing procedures will be determined after the 5 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 hold pressure is 2300 psig. Measurable gas volumes or Hydrogen Sulfide levels have not been encountered during drilling operations in this area, although a Hydrogen Sulfide

Drilling Operation Plan is attached to this program. No major loss of circulation zones has been reported in offsetting wells.

11. Anticipated Starting Date and Duration of Operations

Road and location work will not begin until approval has been received from the BLM. As this is a Master Drilling plan, please refer to the Form 3160-3 for the anticipated start date. Once commenced, drilling operations should be finished in approximately 15 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.

CONCHO

COG Operating LLC

Lea County, NM (NAD27 NME)
GC Federal #47
GC Federal #47

OH

Plan: Plan #1 - 7-7/8" Hole
SHL = 1505' FSL & 200' FEL
BHL = 980' FSL & 340' FEL
Top of Paddock = 429' S of Surf & 111' W of Surf @ 5375' TVD

Standard Planning Report

05 January, 2011

Scientific Drilling
Directional Drilling Operations

Database:	EDM-Julio	**Local Co-ordinate Reference:**	Well GC Federal #47
Company:	COG Operating LLC	**TVD Reference:**	GL Elev @ 4003 00usft
Project:	Lea County, NM (NAD27 NME)	**MD Reference:**	GL Elev @ 4003.00usft
Site:	GC Federal #47	**North Reference:**	Grid
Well:	GC Federal #47	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - 7-7/8" Hole		

Project Lea County, NM (NAD27 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 GC Federal #47

Site Position:		**Northing:**	661,349 00 usft	**Latitude:**	32° 49' 0 891 N
From:	Map	**Easting:**	669,940 70 usft	**Longitude:**	103° 46' 48.617 W
Position Uncertainty:	0 00 usft	**Slot Radius:**	0 "	**Grid Convergence:**	0 30 °

Well GC Federal #47

Well Position	**+N/-S**	0 00 usft	**Northing:**	661,349 00 usft	**Latitude:**	32° 49' 0 891 N
	+E/-W	0 00 usft	**Easting:**	669,940 70 usft	**Longitude:**	103° 46' 48 617 W
Position Uncertainty		0 00 usft	**Wellhead Elevation:**		**Ground Level:**	4,003.00 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2011/01/05	7 78	60 71	48,991

Design Plan #1 - 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	194 55

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	
2,200 00	0 00	0 00	2,200 00	0.00	0 00	0 00	0 00	0 00	0 00	
2,638 61	8 77	194 55	2,636 90	-32 44	-8 42	2 00	2 00	0 00	194 55	
5,134 81	8 77	194 55	5,103 90	-400 92	-104 06	0 00	0.00	0 00	0.00	
5,407 53	3 32	194.55	5,375 00	-428.70	-111 28	2 00	-2 00	0 00	180 00	TG1-GC #47
7,135 43	3 32	194 55	7,100 00	-525 50	-136 40	0 00	0 00	0 00	0 00	PBHL-GC #47

Database:	EDM-Julio	**Local Co-ordinate Reference:**	Well GC Federal #47
Company:	COG Operating LLC	**TVD Reference:**	GL Elev @ 4003 00usft
Project:	Lea County, NM (NAD27 NME)	**MD Reference:**	GL Elev @ 4003 00usft
Site:	GC Federal #47	**North Reference:**	Grid
Well:	GC Federal #47	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - 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
South HL-GC #47 - East HL-GC #47									
2,100 00	0 00	0 00	2,100 00	0 00	0 00	0 00	0 00	0 00	0 00
8-5/8" Casing									
2,200 00	0 00	0 00	2,200 00	0 00	0 00	0 00	0 00	0 00	0 00
KOP Start Build 2.00°/100'									
2,300 00	2 00	194 55	2,299 98	-1.69	-0 44	1 75	2 00	2 00	0 00
2,400 00	4 00	194 55	2,399 84	-6.75	-1 75	6 98	2 00	2 00	0 00
2,500 00	6 00	194.55	2,499 45	-15 19	-3 94	15 69	2.00	2.00	0 00
2,600 00	8 00	194 55	2,598 70	-26 99	-7 00	27 88	2 00	2 00	0 00
2,638 61	8 77	194 55	2,636 90	-32 44	-8.42	33.51	2.00	2 00	0 00
EOC Hold 8.77°									
2,700 00	8.77	194 55	2,697 57	-41 50	-10 77	42 87	0 00	0 00	0 00
2,800 00	8 77	194 55	2,796 40	-56 26	-14.60	58 12	0 00	0 00	0 00
2,900 00	8 77	194 55	2,895 23	-71 02	-18 43	73.37	0.00	0.00	0 00
3,000 00	8 77	194 55	2,994 06	-85 78	-22 27	88 63	0 00	0 00	0.00
3,100 00	8.77	194.55	3,092.89	-100 54	-26 10	103 88	0 00	0 00	0 00
3,200 00	8.77	194 55	3,191 72	-115 31	-29 93	119 13	0 00	0 00	0 00
3,300 00	8 77	194 55	3,290 55	-130 07	-33 76	134 38	0 00	0 00	0 00
3,400 00	8 77	194.55	3,389 38	-144.83	-37 59	149 63	0 00	0 00	0 00
3,500 00	8 77	194 55	3,488 21	-159.59	-41.42	164.88	0 00	0 00	0 00
3,600 00	8 77	194 55	3,587 04	-174 35	-45 26	180 13	0 00	0 00	0 00
3,700 00	8 77	194 55	3,685 87	-189 11	-49 09	195 38	0.00	0 00	0 00
3,800 00	8 77	194.55	3,784.70	-203 88	-52 92	210 63	0 00	0 00	0 00
3,900 00	8 77	194 55	3,883 53	-218 64	-56.75	225 88	0.00	0 00	0 00
4,000 00	8 77	194 55	3,982 36	-233.40	-60 58	241 13	0 00	0.00	0 00
4,100 00	8 77	194 55	4,081 19	-248 16	-64 41	256 38	0 00	0 00	0 00
4,200 00	8.77	194 55	4,180 02	-262 92	-68 24	271 63	0 00	0 00	0 00
4,300.00	8 77	194 55	4,278 85	-277 68	-72 08	286.89	0 00	0 00	0 00
4,400 00	8 77	194 55	4,377 68	-292 45	-75 91	302 14	0 00	0 00	0 00
4,500 00	8 77	194.55	4,476 51	-307 21	-79 74	317.39	0.00	0.00	0 00
4,600 00	8 77	194 55	4,575 34	-321.97	-83 57	332.64	0 00	0 00	0 00
4,700 00	8 77	194.55	4,674.18	-336 73	-87 40	347 89	0 00	0 00	0 00
4,800 00	8 77	194 55	4,773 01	-351 49	-91 23	363 14	0 00	0 00	0 00
4,900 00	8 77	194 55	4,871 84	-366 25	-95 07	378 39	0 00	0 00	0 00
5,000 00	8 77	194 55	4,970 67	-381 01	-98 90	393 64	0 00	0 00	0 00
5,100 00	8 77	194 55	5,069.50	-395 78	-102 73	408 89	0 00	0 00	0 00
5,134 81	8 77	194 55	5,103 90	-400 92	-104 06	414 20	0 00	0 00	0 00
Start DLS 2.00°/100'									
5,200 00	7 47	194 55	5,168 43	-409 83	-106 38	423 41	2 00	-2 00	0 00
5,300 00	5 47	194 55	5,267 79	-420 73	-109 21	434 67	2.00	-2 00	0 00
5,400.00	3 47	194 55	5,367 48	-428 27	-111.16	442 46	2 00	-2 00	0 00
5,407 53	3 32	194 55	5,375 00	-428 70	-111 28	442 91	2 00	-2 00	0 00
EOC Hold 3.32° - TG1-GC #47									
5,500 00	3 32	194 55	5,467.31	-433 88	-112 62	448 26	0 00	0 00	0 00
5,600 00	3 32	194 55	5,567 15	-439 49	-114 07	454 05	0 00	0 00	0 00
5,700 00	3 32	194.55	5,666 98	-445 09	-115 53	459 84	0 00	0 00	0 00
5,800 00	3 32	194 55	5,766 81	-450 69	-116 98	465 62	0.00	0 00	0 00
5,900 00	3 32	194 55	5,866 64	-456 29	-118.44	471 41	0 00	0 00	0 00
6,000 00	3.32	194.55	5,966 48	-461 89	-119 89	477 20	0 00	0 00	0 00
6,100.00	3 32	194 55	6,066 31	-467 50	-121 34	482 99	0.00	0 00	0 00
6,200 00	3 32	194 55	6,166 14	-473 10	-122 80	488 77	0 00	0 00	0 00
6,300 00	3 32	194 55	6,265 97	-478.70	-124 25	494 56	0.00	0 00	0 00

Database:	EDM-Julio	**Local Co-ordinate Reference:**	Well GC Federal #47
Company:	COG Operating LLC	**TVD Reference:**	GL Elev @ 4003 00usft
Project:	Lea County, NM (NAD27 NME)	**MD Reference:**	GL Elev @ 4003.00usft
Site:	GC Federal #47	**North Reference:**	Grid
Well:	GC Federal #47	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - 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)
6,400.00	3 32	194 55	6,365 81	-484 30	-125.71	500 35	0 00	0 00	0 00
6,500 00	3 32	194 55	6,465.64	-489 90	-127 16	506 14	0 00	0 00	0 00
6,600 00	3 32	194.55	6,565 47	-495 51	-128 61	511 93	0 00	0.00	0.00
6,700.00	3 32	194 55	6,665 30	-501 11	-130 07	517 71	0 00	0.00	0 00
6,800.00	3 32	194 55	6,765 14	-506 71	-131 52	523 50	0 00	0 00	0 00
6,900 00	3 32	194 55	6,864 97	-512 31	-132 98	529.29	0 00	0.00	0 00
7,000.00	3 32	194 55	6,964 80	-517 91	-134.43	535 08	0 00	0 00	0 00
7,100.00	3 32	194 55	7,064 63	-523 52	-135.88	540 86	0 00	0 00	0 00
7,135 43	3 32	194 55	7,100.00	-525 50	-136 40	542.91	0 00	0 00	0 00
PBHL-GC #47									

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
South HL-GC #47 - plan misses target center by 530 77usft at 0 00usft MD (0 00 TVD, 0 00 N, 0 00 E) - Rectangle (sides W300 00 H0 00 D0 00)	0 00	0.00	0.00	-515 50	-126 40	660,833.50	669,814 30	32° 48' 55 796 N	103° 46' 50 129 W
East HL-GC #47 - plan misses target center by 530.77usft at 0 00usft MD (0 00 TVD, 0 00 N, 0 00 E) - Rectangle (sides W0 00 H300 00 D0 00)	0 00	0 00	0 00	-515 50	-126 40	660,833 50	669,814 30	32° 48' 55 796 N	103° 46' 50 129 W
TG1-GC #47 - plan hits target center - Point	0 00	0 01	5,375.00	-428.70	-111 28	660,920 30	669,829 43	32° 48' 56 654 N	103° 46' 49 947 W
PBHL-GC #47 - plan hits target center - Circle (radius 10 00)	0 00	0 00	7,100 00	-525 50	-136 40	660,823 50	669,804 30	32° 48' 55 698 N	103° 46' 50 247 W

Casing Points

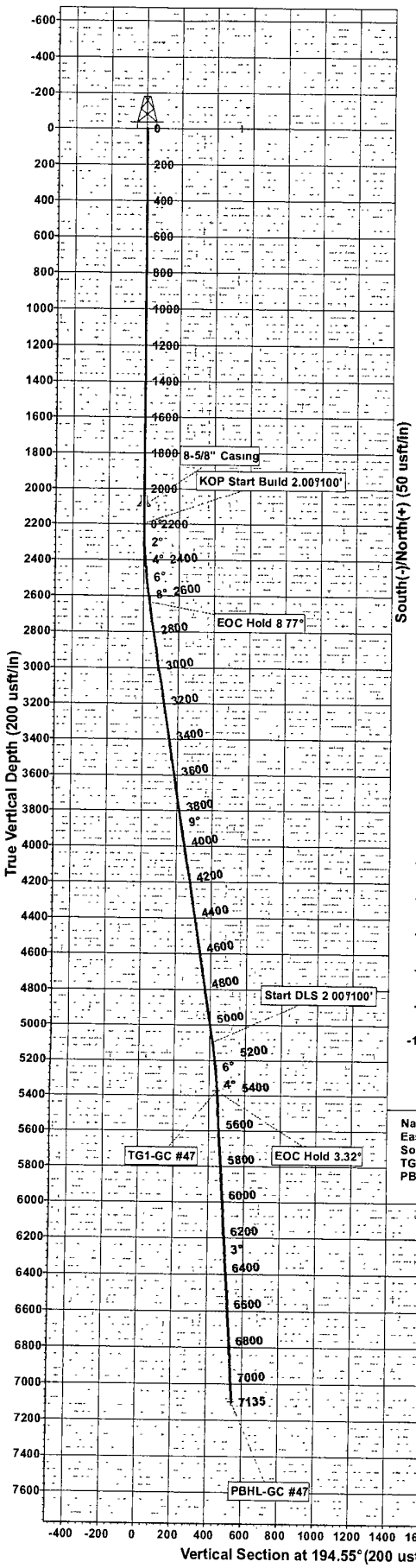
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
2,100 00	2,100 00	8-5/8" Casing	8-5/8	12-1/4

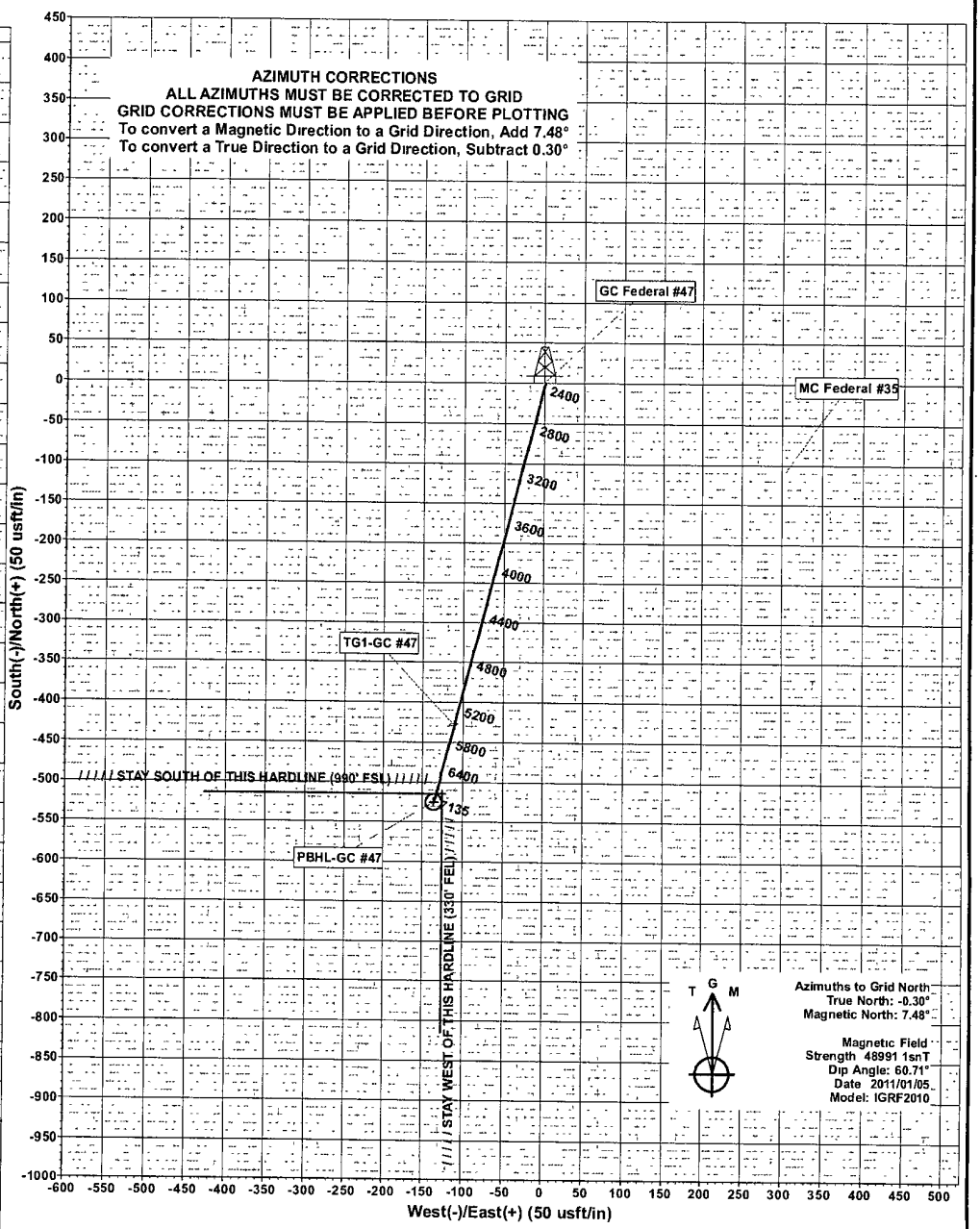
Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
2,200 00	2,200.00	0 00	0 00	KOP Start Build 2 00°/100'
2,638 61	2,636 90	-32 44	-8 42	EOC Hold 8 77°
5,134 81	5,103.90	-400 92	-104 06	Start DLS 2 00°/100'
5,407 53	5,375 00	-428 70	-111 28	EOC Hold 3 32°

Scientific Drilling for COG Operating LLC
Site: Lea County, NM (NAD27 NME)
Well: GC Federal #47
Wellbore: OH
Design: Plan #1 - 7-7/8" Hole

Scientific Drilling
Directional Drilling Operations





WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
East HL-GC #47	0.00	-515.50	-126.40	660833.50	669814.30	32°48' 55.796 N	103°46' 50.129 W	Rectangle (Sides: L 300.00 W0.00)
South HL-GC #47	0.00	-515.50	-126.40	660833.50	669814.30	32°48' 55.796 N	103°46' 50.129 W	Rectangle (Sides: L0.00 W300.00)
TG1-GC #47	5375.00	-428.70	-111.28	660920.30	669829.42	32°48' 56.654 N	103°46' 49.947 W	Point
PBHL-GC #47	7100.00	-525.50	-136.40	660823.50	669804.30	32°48' 55.698 N	103°46' 50.247 W	Circle (Radius: 10.00)

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2200.00	0.00	0.00	2200.00	0.00	0.00	0.00	0.00	0.00	
3	2638.61	8.77	194.55	2636.90	-32.44	-8.42	2.00	194.55	33.51	
4	5134.81	8.77	194.55	5103.90	-400.92	-104.06	0.00	0.00	414.20	
5	5407.53	3.32	194.55	5375.00	-428.70	-111.28	2.00	180.00	442.91	TG1-GC #47
6	7135.43	3.32	194.55	7100.00	-525.50	-136.40	0.00	0.00	542.91	PBHL-GC #47

WELL DETAILS: GC Federal #47

Ground Level: 4003.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	661349.00	669940.70	32°49' 0.891 N	103°46' 4.8.617 W	

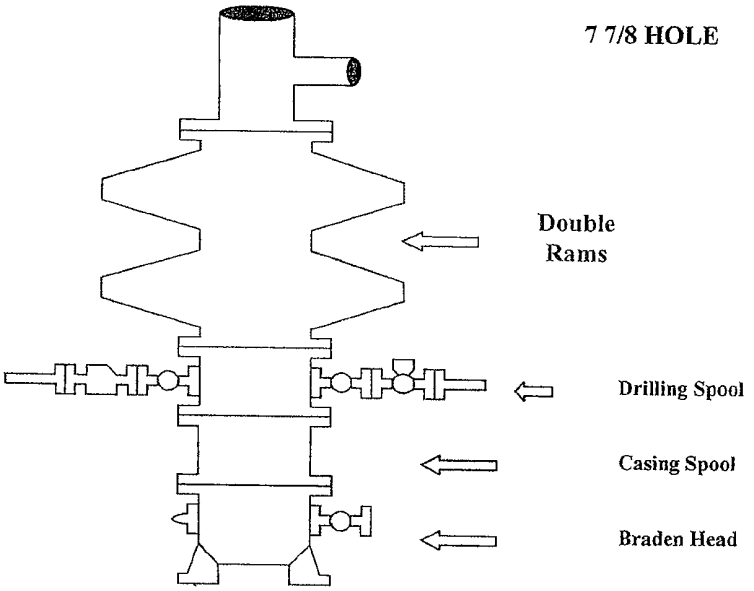
PROJECT DETAILS: Lea County, NM (NAD27 NME)

Plan: Plan #1 - 7-7/8" Hole (GC Federal #47/OH)

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

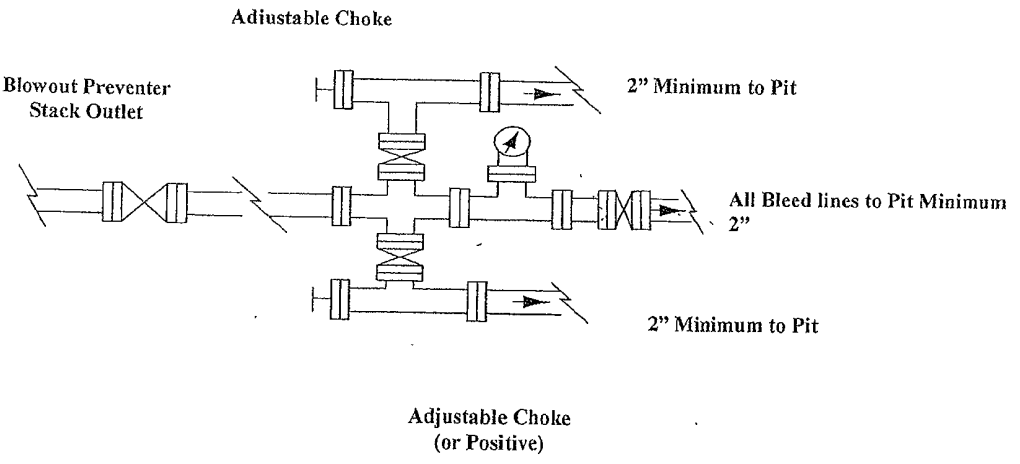
Created By: Julio Pina — Date: 05-Jan-11
Checked: _____ Date: _____
Reviewed: _____ Date: _____
Approved: _____ Date: _____

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.

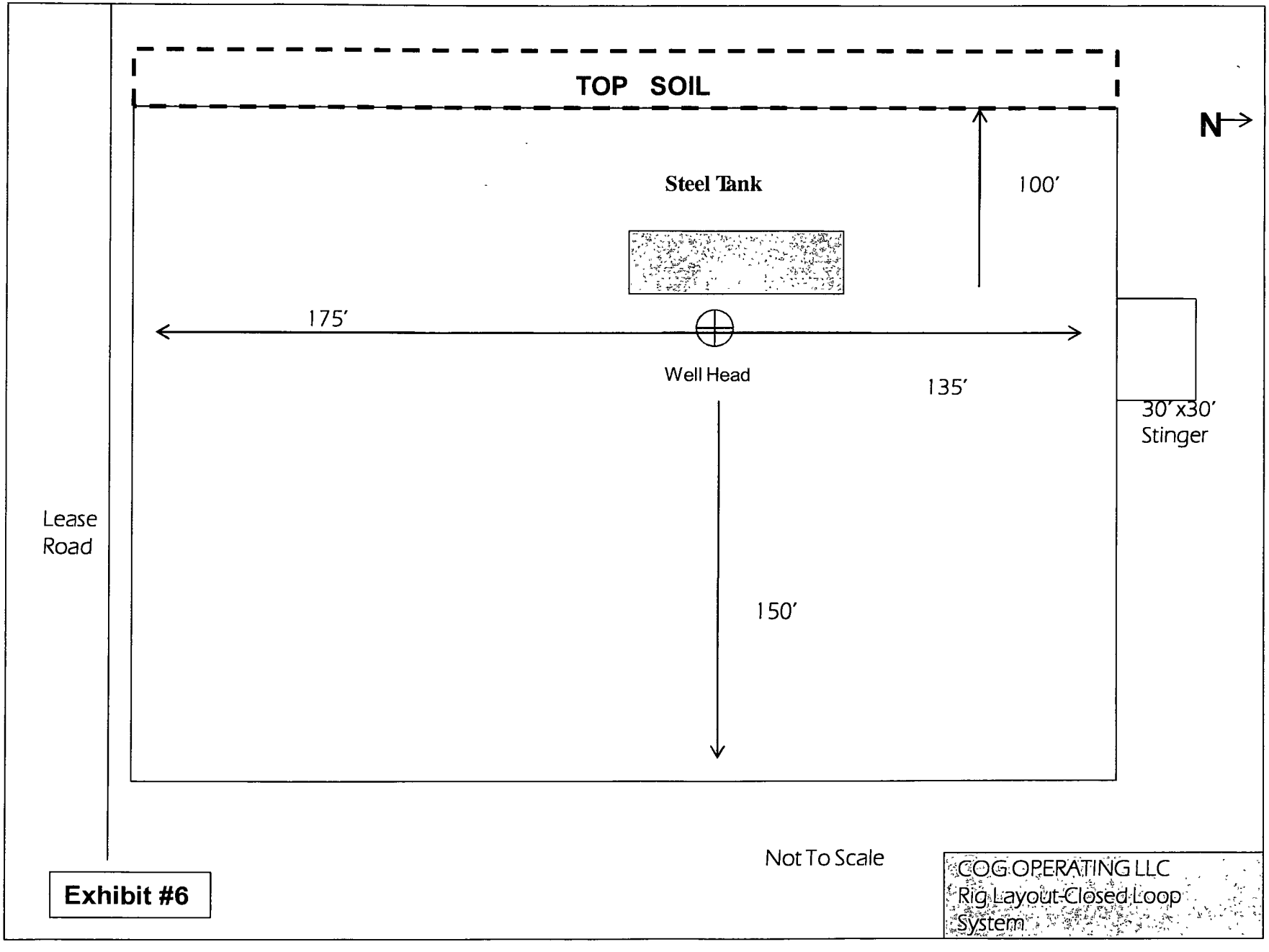

TOP SOIL
N
Steel Tank
100'
175'
Well Head
135'
30' x30'
Stinger
Lease
Road
150'
Not To Scale
COG OPERATING LLC
Rig Layout-Closed Loop
System

Exhibit #6