A-15-10-301

Form 3160-3
(April 2004)

OCD Artesia

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.
NMNM-007752

6. If Indian, Allotee or Tribe Name
N/A

1a. Type of work: ☑ DRILL ☐ REENTER

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

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

8. Lease Name and Well No.
Randall Federal #5

2. Name of Operator
COG Operating LLC

9. API Well No.
30-015- 38506

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

3b. Phone No. *(include area code)*
(432) 685-4385

10. Field and Pool, or Exploratory
Loco Hills; Glorieta Yeso 96718

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface **SHL: 1170' FSL & 330' FEL, UL P**
At proposed prod. zone **BHL: 990' FSL & 330' FEL, UL P**

UNORTHODOX LOCATION Becomes orthodox at appr 4090' MD

11. Sec., T. R. M. or Blk. and Survey or Area
Sec 7, T17S, R30E

14. Distance in miles and direction from nearest town or post office*
2 miles North of 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 drlg. unit line, if any)	16. No. of acres in lease	17. Spacing Unit dedicated to this well
330'	**1154.53**	**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
870'	TVD 5900' 5907 MD	**NMB000215**
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
3663' GL	**11/30/2010**	**10 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
Robyn Odom	**Robyn M. Odom**	**08/18/2010**

Title
Regulatory Analyst

Approved by *(Signature)*	Name *(Printed Typed)*	Date
/s/ Don Peterson		FEB 15 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)

RECEIVED
FEB 22 2011
NMOCD ARTESIA

SEE ATTACHED FOR CONDITIONS OF APPROVAL

Approval Subject to General Requirements & Special Stipulations Attached

Roswell Controlled Water Basin

MASTER DRILLING PROGRAM

1. Geologic Name of Surface Formation

Quaternary

2. Estimated Tops of Important Geologic Markers:

Quaternary	Surface
Top of Salt	500'
Base of Salt	1000'
Yates	1180'
Seven Rivers	1470'
Queen	2070'
Grayburg	2480'
San Andres	2780'
Glorietta	4220'
Yeso Group	4300'

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

Water Sand	150'	Fresh Water
Grayburg	2480'	Oil/Gas
San Andres	2780'	Oil/Gas
Glorietta	4220'	Oil/Gas
Yeso Group	4300'	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 ~~425'~~ 375' 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 ~~1300'~~ 1150' 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

4. Casing Program

Hole Size	Interval	OD Casing	Weight	Grade	Jt., Condition	Jt.	brst/clps/ten
17 ½"	0-~~425'~~ 372'	13 3/8"	48#	H-40orJ-55	ST&C/New	ST&C	9.22/3.943/15.8
11"or~~12¼~~"	0-~~1500'~~ 1100'	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

13 3/8" Surface Casing: Class C, 450 sx, yield 1.32, back to surface

8 5/8" Intermediate Casing:

11" Hole:

Single Stage: 50:50:10, 300 sx lead, yield-2.45 + Class C, 200 sx tail, yield-1.32, back to surface.

Multi-Stage: Stage 1: Class C, 300 sx, yield-1.32 Stage 2: Class C, 200 sx, yield-2.45, back to surface. Multi stage tool to be set at approximately, ~~depending on hole conditions~~, 425'

See COA

5 1/2" Production Casing:

Single Stage: 35:65:6, 500 sx Lead, yield-2.05 + 50:50:2, 400 sx Tail, yield-1.37, to 200' minimum tie back to intermediate casing.

Multi-Stage: Stage 1: 50:50:2, 400 sx, yield-1.37 Stage 2: 35:65:6, 500 sx, yield-2.05, to 200' minimum tie back to intermediate casing. Multi stage tool to be set at approximately, ~~depending on hole conditions, TD~~ - 2000'.

See COA

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. 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. The BOP will be nipped up on the 13 3/8" surface casing with BOP equipment and tested ~~together to 1000 psi by rig pump in one test~~. See COA The BOP will then be nipped 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. All BOP's and accessory equipment will be tested to 2000 psi before drilling out of the intermediate casing. 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.

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-~~425'~~ 375'	Fresh Water	8.5	28	N.C.
375' ~~425'~~ ~~1300'~~ 1150'	Brine	10	30	N.C.
~~1300'~~-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 12 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

Eddy County, NM (NAN27 NME)
Randall Federal #5
Randall Federal #5

OH

Plan: Plan #1 - 7-7/8" Hole
SHL = 1170' FSL & 330' FEL
BHL = 980' FSL & 380' FEL
Top of Paddock = 980' FSL & 380' FEL @ 4300' TVD

Standard Planning Report

18 November, 2010

Scientific Drilling
Directional Drilling Operations

Database:	EDM-Julio	**Local Co-ordinate Reference:**	Site Randall Federal #5
Company:	COG Operating LLC	**TVD Reference:**	GL Elev. @ 3663.00usft
Project:	Eddy County, NM (NAN27 NME)	**MD Reference:**	GL Elev. @ 3663.00usft
Site:	Randall Federal #5	**North Reference:**	Grid
Well:	Randall Federal #5	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - 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 Randall Federal #5

Site Position:		**Northing:**	671,244.70 usft	**Latitude:**	32° 50' 41.646 N
From:	Map	**Easting:**	601,353.40 usft	**Longitude:**	104° 0' 11.952 W
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.18 °

Well Randall Federal #5

Well Position	**+N/-S**	0.00 usft	**Northing:**	671,244.70 usft	**Latitude:**	32° 50' 41.646 N
	+E/-W	0.00 usft	**Easting:**	601,353.40 usft	**Longitude:**	104° 0' 11.952 W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**		**Ground Level:**	3,663.00 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2010/11/18	7.90	60.70	48,998

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	195.42

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	
1,450.00	0.00	0.00	1,450.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,663.79	4.28	195.42	1,663.59	-7.69	-2.12	2.00	2.00	0.00	195.42	
4,093.37	4.28	195.42	4,086.41	-182.31	-50.28	0.00	0.00	0.00	0.00	
4,307.16	0.00	0.00	4,300.00	-190.00	-52.40	2.00	-2.00	0.00	180.00	TG1-Randall #5
5,907.16	0.00	0.00	5,900.00	-190.00	-52.40	0.00	0.00	0.00	0.00	PBHL-Randall #5

Database:	EDM-Julio	**Local Co-ordinate Reference:**	Site Randall Federal #5
Company:	COG Operating LLC	**TVD Reference:**	GL Elev. @ 3663.00usft
Project:	Eddy County, NM (NAN27 NME)	**MD Reference:**	GL Elev. @ 3663.00usft
Site:	Randall Federal #5	**North Reference:**	Grid
Well:	Randall Federal #5	**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
1,350.00	0.00	0.00	1,350.00	0.00	0.00	0.00	0.00	0.00	0.00
8-5/8" Casing									
1,450.00	0.00	0.00	1,450.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP Start Build 2.00°/100'									
1,500.00	1.00	195.42	1,500.00	-0.42	-0.12	0.44	2.00	2.00	0.00
1,600.00	3.00	195.42	1,599.93	-3.78	-1.04	3.93	2.00	2.00	0.00
1,663.79	4.28	195.42	1,663.59	-7.69	-2.12	7.97	2.00	2.00	0.00
EOC hold 4.28°									
1,700.00	4.28	195.42	1,699.70	-10.29	-2.84	10.67	0.00	0.00	0.00
1,800.00	4.28	195.42	1,799.42	-17.48	-4.82	18.13	0.00	0.00	0.00
1,900.00	4.28	195.42	1,899.14	-24.66	-6.80	25.59	0.00	0.00	0.00
2,000.00	4.28	195.42	1,998.87	-31.85	-8.78	33.04	0.00	0.00	0.00
2,100.00	4.28	195.42	2,098.59	-39.04	-10.77	40.50	0.00	0.00	0.00
2,200.00	4.28	195.42	2,198.31	-46.23	-12.75	47.95	0.00	0.00	0.00
2,300.00	4.28	195.42	2,298.03	-53.41	-14.73	55.41	0.00	0.00	0.00
2,400.00	4.28	195.42	2,397.75	-60.60	-16.71	62.86	0.00	0.00	0.00
2,500.00	4.28	195.42	2,497.47	-67.79	-18.70	70.32	0.00	0.00	0.00
2,600.00	4.28	195.42	2,597.20	-74.98	-20.68	77.78	0.00	0.00	0.00
2,700.00	4.28	195.42	2,696.92	-82.16	-22.66	85.23	0.00	0.00	0.00
2,800.00	4.28	195.42	2,796.64	-89.35	-24.64	92.69	0.00	0.00	0.00
2,900.00	4.28	195.42	2,896.36	-96.54	-26.62	100.14	0.00	0.00	0.00
3,000.00	4.28	195.42	2,996.08	-103.73	-28.61	107.60	0.00	0.00	0.00
3,100.00	4.28	195.42	3,095.80	-110.91	-30.59	115.06	0.00	0.00	0.00
3,200.00	4.28	195.42	3,195.53	-118.10	-32.57	122.51	0.00	0.00	0.00
3,300.00	4.28	195.42	3,295.25	-125.29	-34.55	129.97	0.00	0.00	0.00
3,400.00	4.28	195.42	3,394.97	-132.48	-36.54	137.42	0.00	0.00	0.00
3,500.00	4.28	195.42	3,494.69	-139.66	-38.52	144.88	0.00	0.00	0.00
3,600.00	4.28	195.42	3,594.41	-146.85	-40.50	152.33	0.00	0.00	0.00
3,700.00	4.28	195.42	3,694.13	-154.04	-42.48	159.79	0.00	0.00	0.00
3,800.00	4.28	195.42	3,793.86	-161.23	-44.46	167.25	0.00	0.00	0.00
3,900.00	4.28	195.42	3,893.58	-168.41	-46.45	174.70	0.00	0.00	0.00
4,000.00	4.28	195.42	3,993.30	-175.60	-48.43	182.16	0.00	0.00	0.00
4,093.37	4.28	195.42	4,086.41	-182.31	-50.28	189.12	0.00	0.00	0.00
Start Drop 2.00°/100'									
4,100.00	4.14	195.42	4,093.02	-182.78	-50.41	189.61	2.00	-2.00	0.00
4,200.00	2.14	195.42	4,192.87	-188.07	-51.87	195.09	2.00	-2.00	0.00
4,300.00	0.14	195.42	4,292.84	-189.99	-52.40	197.08	2.00	-2.00	0.00
4,307.16	0.00	0.00	4,300.00	-190.00	-52.40	197.09	2.00	-2.00	2,298.87
EOC hold 0.00° - TG1-Randall #5									
5,907.16	0.00	0.00	5,900.00	-190.00	-52.40	197.09	0.00	0.00	0.00
PBHL-Randall #5									

Database:	EDM-Julio	**Local Co-ordinate Reference:**	Site Randall Federal #5
Company:	COG Operating LLC	**TVD Reference:**	GL Elev. @ 3663.00usft
Project:	Eddy County, NM (NAN27 NME)	**MD Reference:**	GL Elev. @ 3663.00usft
Site:	Randall Federal #5	**North Reference:**	Grid
Well:	Randall Federal #5	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - 7-7/8" Hole		

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
West HL-Randall #5 - plan misses target center by 180.02usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) - Rectangle (sides W0.00 H100.00 D0.00)	0.00	0.00	0.00	-180.00	-2.40	671,064.70	601,351.00	32° 50' 39.864 N	104° 0' 11.987 W
North HL-Randall #5 - plan misses target center by 180.02usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) - Rectangle (sides W200.00 H0.00 D0.00)	0.00	0.00	0.00	-180.00	-2.40	671,064.70	601,351.00	32° 50' 39.864 N	104° 0' 11.987 W
TG1-Randall #5 - plan hits target center - Point	0.00	0.00	4,300.00	-190.00	-52.40	671,054.70	601,301.00	32° 50' 39.767 N	104° 0' 12.574 W
PBHL-Randall #5 - plan hits target center - Circle (radius 50.00)	0.00	0.00	5,900.00	-190.00	-52.40	671,054.70	601,301.00	32° 50' 39.767 N	104° 0' 12.574 W

Casing Points

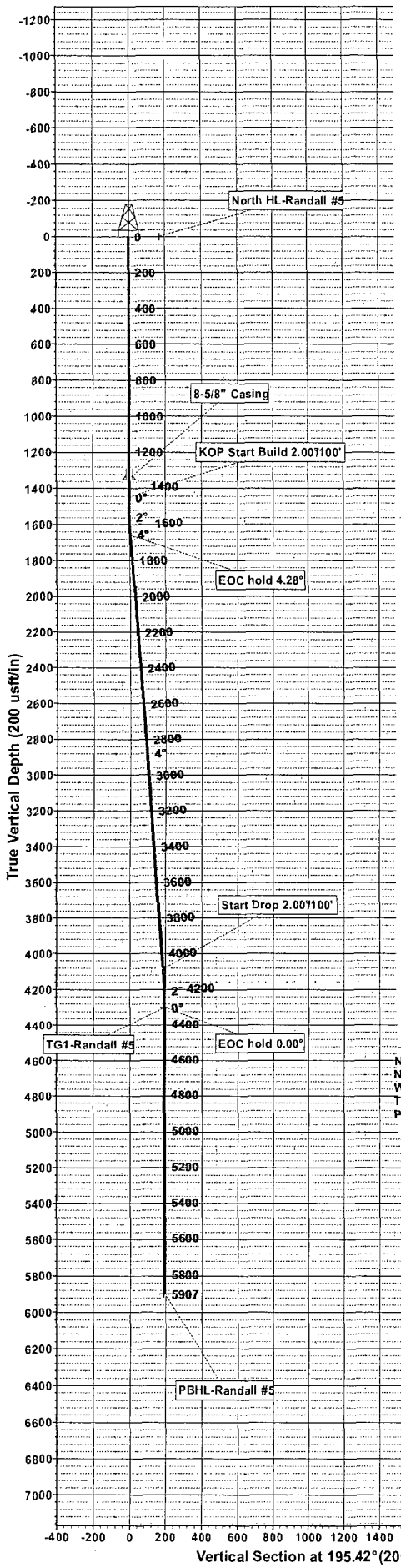
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,350.00	1,350.00	8-5/8" Casing	8-5/8	12-1/4

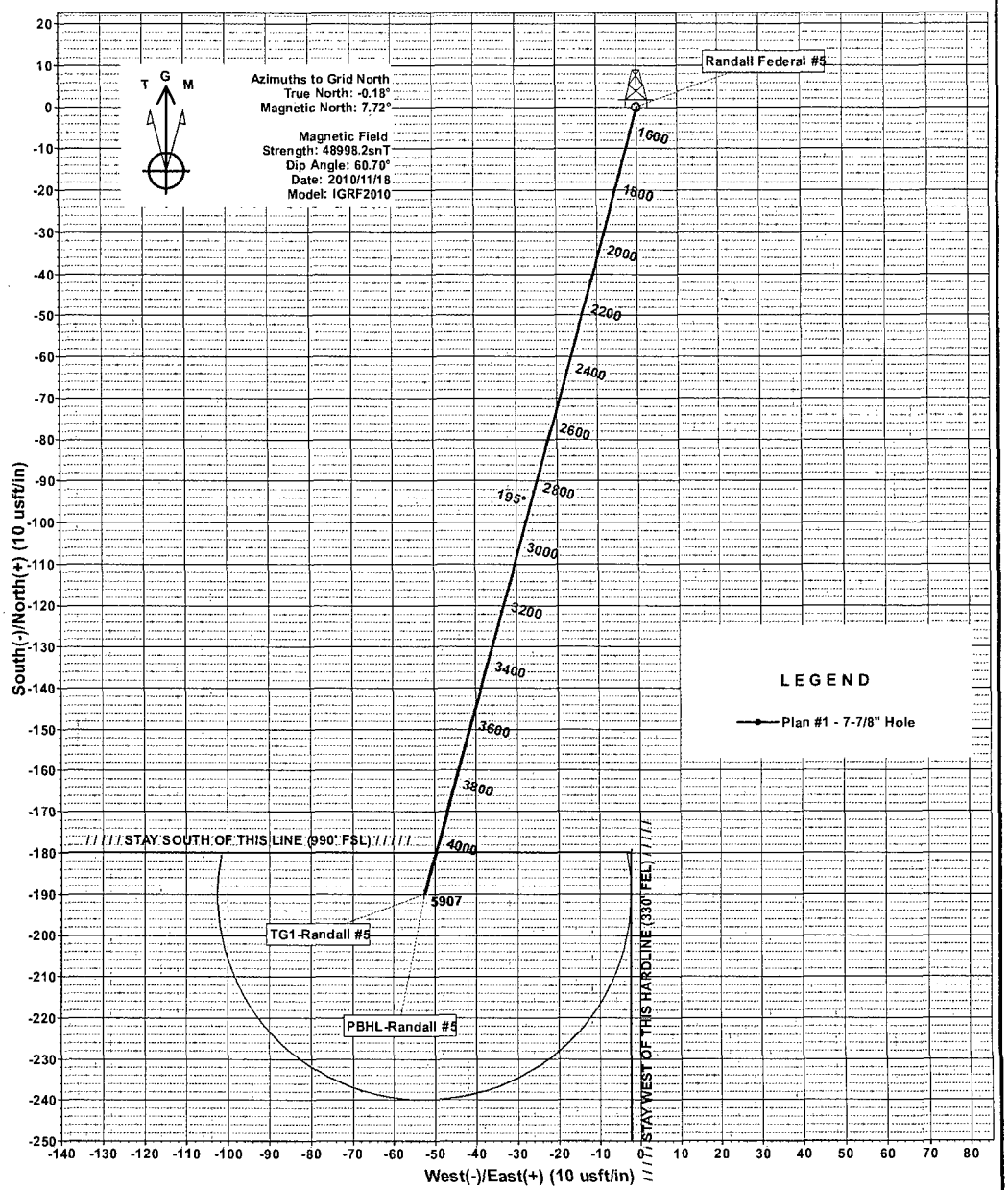
Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
1,450.00	1,450.00	0.00	0.00	KOP Start Build 2.00°/100'
1,663.79	1,663.59	-7.69	-2.12	EOC hold 4.28°
4,093.37	4,086.41	-182.31	-50.28	Start Drop 2.00°/100'
4,307.16	4,300.00	-190.00	-52.40	EOC hold 0.00°

Scientific Drilling for COG Operating LLC
Site: Eddy County, NM (NAN27 NME)
Well: Randall Federal #5
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
North HL-Randall #5	0.00	-180.00	-2.40	671064.70	601351.00	32° 50' 39.864 N	104° 0' 11.987 W	Rectangle (Sides: L0.00 W200.00)
West HL-Randall #5	0.00	-180.00	-2.40	671064.70	601351.00	32° 50' 39.864 N	104° 0' 11.987 W	Rectangle (Sides: L100.00 W0.00)
TG1-Randall #5	4300.00	-190.00	-52.40	671054.70	601301.00	32° 50' 39.767 N	104° 0' 12.574 W	Point
PBHL-Randall #5	5900.00	-190.00	-52.40	671054.70	601301.00	32° 50' 39.767 N	104° 0' 12.574 W	Circle (Radius: 5 0.00)

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	1450.00	0.00	0.00	1450.00	0.00	0.00	0.00	0.00	0.00	
3	1663.79	4.28	195.42	1663.59	-7.69	-2.12	2.00	195.42	7.97	
4	4093.37	4.28	195.42	4086.41	-182.31	-50.28	0.00	0.00	189.12	
5	4307.16	0.00	0.00	4300.00	-190.00	-52.40	2.00	180.00	197.09	TG1-Randall #5
6	5907.16	0.00	0.00	5900.00	-190.00	-52.40	0.00	0.00	197.09	PBHL-Randall #5

WELL DETAILS: Randall Federal #5

Ground Level: 3663.00

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude	Slot
0.00	0.00	671244.70	601353.40	32° 50' 41.646 N	104° 0' 1 1.952 W	

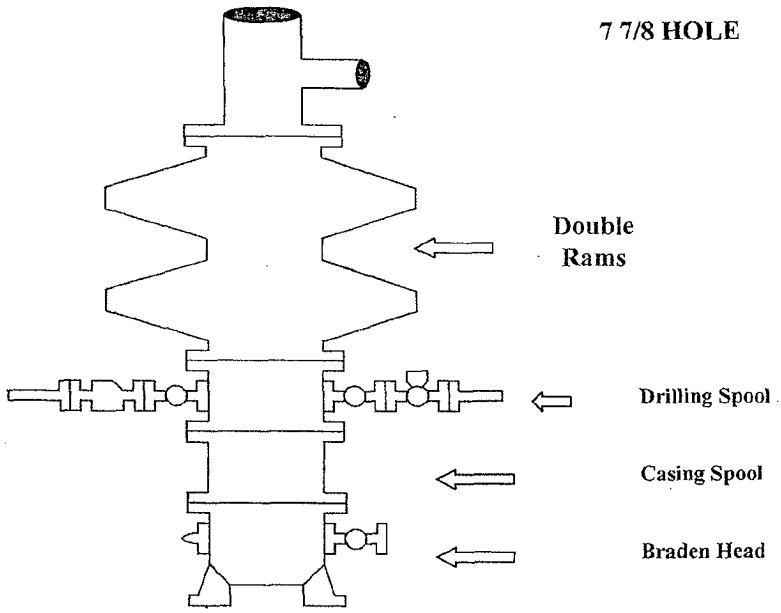
PROJECT DETAILS: Eddy County, NM (NAN27 NME)

Plan: Plan #1 - 7-7/8" Hole (Randall Federal #5/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

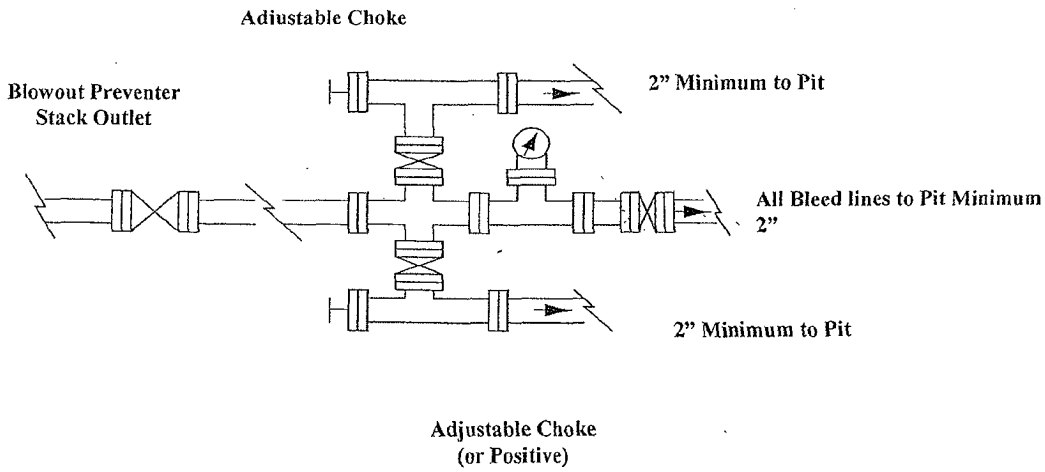
Created By: Julio Pina Date: 18-Nov-10
Checked: _____ Date: _____
Reviewed: _____ Date: _____
Approved: _____ Date: _____

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



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.