

BLM Carlsbad Field Office

Form 3160-3
(April 2004)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

NOS-2/3/09

APPLICATION FOR PERMIT TO DRILL OR REENTER

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

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMLC-029020G
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name N/A
2. Name of Operator COG Operating LLC		7. If Unit or CA Agreement, Name and No. N/A
3a. Address 550 W. Texas, Suite 1300 Midland TX 79701	3b. Phone No. (include area code) (432) 685-4385	8. Lease Name and Well No. Dexter Federal #10
4. Location of Well (Report location clearly and in accordance with any State requirements) At surface SHL: 1485' FSL & 865' FEL, UL I At proposed prod. zone BHL: 1650' FSL & 990' FEL, UL I		9. API Well No. 30-015-31351
10. Field and Pool, or Exploratory Loco Hills; Glorieta Yeso 96718		11. Sec., T. R. M. or Blk. and Survey or Area Sec 22, 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
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 865'		13. State NM
16. No. of acres in lease 120	17. Spacing Unit dedicated to this well 40	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 650'	19. Proposed Depth 6300' 6161' MD 6150' VD	20. BLM/BIA Bond No. on file NMB000215
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3651' GL	22. Approximate date work will start* 10/31/2009	23. Estimated duration 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. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be required by the authorized officer. |

25. Signature 	Name (Printed/Typed) Robyn M. Odom	Date 09/17/2009
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Title Regulatory Analyst	
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Approved by (Signature) 	Name (Printed/Typed) Dan Pata	Date 10/19/09
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Title FIELD MANAGER	Office CARLSBAD FIELD OFFICE
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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

Witness Surface Casing

well becomes orthodex at MD 4261'
VD 4250'

RECEIVED
MAR 08 2011
NMOCD ARTESIA

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

APPROVAL SUBJECT TO
GENERAL REQUIREMENTS
AND SPECIAL STIPULATIONS
ATTACHED

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

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to 425' 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' and circulating cement back to the surface. Any shallower zones above TD, which contain commercial quantities of oil and/or gas, will have cement circulated across them by cementing 5 1/2" production casing back 200' into the intermediate casing, to be run at TD.

4. Casing Program See COA

Hole Size	Interval	OD Casing	Weight	Grade	Jt., Condition	Jt.	brst/clps/ten
17 1/2"	0-425'	13 3/8"	48#	H-40orJ-55	ST&C/New	ST&C	9.22/3.943/15.8
11" or 12 1/4"	0-1300'	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

See COA

5. Cement Program

13 3/8" Surface Casing: Class C, 475 sx, yield 1.32, back to surface

8 5/8" Intermediate Casing: 11" Hole: Class C, 300 sx lead, yield-2.45 + 200 sx tail, yield-1.32, back to surface.
12-1/4" Hole: Class C, 600 sx lead, yield-2.45 + 200 sx tail, yield-1.32, back to surface.

5 1/2" Production Casing: Class C, 500 sx Lead, yield-2.05+ 400 sx Tail, yield-1.37, to 200' minimum tie back to intermediate casing.

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. 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) will a 2000 psi WP rating.

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
0-425'	Fresh Water	8.5	28	N.C.
425-1300'	Brine	10	30	N.C.
1300'-TD	Cut Brine	8.7-9.1	29	N.C.

See COA

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 1/2" 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. Low levels of hydrogen sulfide have been monitored in producing wells in the area, so H₂S may be present while drilling the well. 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.



COG Operating LLC

Eddy County, NM (NAN27 NME)

Dexter Federal #10

Dexter Federal #10

OH

Plan: Plan #1 - 7-7/8" Hole

SHL = 1485' FSL & 865' FEL

BHL = 1700' FSL & 980' FEL

Top of Paddock 4250' TVD = 1700' FSL & 980' FEL

Standard Planning Report

17 September, 2009





Scientific Drilling
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Dexter Federal #10.
Company:	COG Operating LLC	TVD Reference:	Ground Elev @ 3651.00ft (Rig ?)
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	Ground Elev @ 3651.00ft (Rig ?)
Site:	Dexter Federal #10	North Reference:	Grid
Well:	Dexter Federal #10	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:	Dexter Federal #10		
Site Position:		Northing:	661,035.30 ft
From:	Map	Easting:	616,693.00 ft
Position Uncertainty:	0.00 ft	Slot Radius:	0 "
		Latitude:	32° 49' 0.111 N
		Longitude:	103° 57' 12.578 W
		Grid Convergence:	0.21 °

Well:	Dexter Federal #10		
Well Position	+N/-S	0.00 ft	Northing:
	+E/-W	0.00 ft	Easting:
Position Uncertainty	0.00 ft	Wellhead Elevation:	Ground Level:
			3,651.00 ft

Wellbore:	OH		
Magnetics:	Model/Name:	Sample Date:	Declination:
	IGRF200510	2009/09/17	8.00
			Dip Angle:
			60.73
			Field Strength:
			49,133

Design:	Plan #1 - 7-7/8" Hole		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(ft)	(ft)	(ft)
	0.00	0.00	0.00
			Direction
			(°)
			331.70

Plan Sections:										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Dogleg	Bulld	Turn	TFO	Target
Depth	(°)	(°)	Depth	(ft)	(ft)	Rate	Rate	Rate	(°)	
(ft)			(ft)			(°/100ft)	(°/100ft)	(°/100ft)		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,375.00	0.00	0.00	1,375.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,642.11	5.34	331.70	1,641.72	10.96	-5.90	2.00	2.00	0.00	331.70	
3,993.88	5.34	331.70	3,983.28	203.74	-109.70	0.00	0.00	0.00	0.00	
4,260.99	0.00	0.00	4,250.00	214.70	-115.60	2.00	-2.00	0.00	180.00	TG1-Dexter #10
6,160.99	0.00	0.00	6,150.00	214.70	-115.60	0.00	0.00	0.00	0.00	PBHL-Dexter #10



Scientific Drilling
Planning Report



Database:	EDM 5000.1-Single User.Db	Local Co-ordinate Reference:	Site Dexter Federal #10
Company:	COG Operating LLC	TVD Reference:	Ground Elev @ 3651.00ft (Rig ?)
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	Ground Elev @ 3651.00ft (Rig ?)
Site:	Dexter Federal #10	North Reference:	Grid
Well:	Dexter Federal #10	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - 7-7/8" Hole		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
South HL-Dexter #10 - East HL-Dexter #10									
1,275.00	0.00	0.00	1,275.00	0.00	0.00	0.00	0.00	0.00	0.00
8 5/8" Casing									
1,375.00	0.00	0.00	1,375.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP Start Build 2.00°/100'									
1,400.00	0.50	331.70	1,400.00	0.10	-0.05	0.11	2.00	2.00	0.00
1,500.00	2.50	331.70	1,499.96	2.40	-1.29	2.73	2.00	2.00	0.00
1,600.00	4.50	331.70	1,599.77	7.78	-4.19	8.83	2.00	2.00	0.00
1,642.11	5.34	331.70	1,641.72	10.96	-5.90	12.44	2.00	2.00	0.00
EOC hold 5.34°									
1,700.00	5.34	331.70	1,699.36	15.70	-8.45	17.83	0.00	0.00	0.00
1,800.00	5.34	331.70	1,798.93	23.90	-12.87	27.14	0.00	0.00	0.00
1,900.00	5.34	331.70	1,898.49	32.10	-17.28	36.45	0.00	0.00	0.00
2,000.00	5.34	331.70	1,998.06	40.29	-21.70	45.76	0.00	0.00	0.00
2,100.00	5.34	331.70	2,097.62	48.49	-26.11	55.07	0.00	0.00	0.00
2,200.00	5.34	331.70	2,197.19	56.69	-30.52	64.38	0.00	0.00	0.00
2,300.00	5.34	331.70	2,296.76	64.89	-34.94	73.69	0.00	0.00	0.00
2,400.00	5.34	331.70	2,396.32	73.08	-39.35	83.01	0.00	0.00	0.00
2,500.00	5.34	331.70	2,495.89	81.28	-43.76	92.32	0.00	0.00	0.00
2,600.00	5.34	331.70	2,595.45	89.48	-48.18	101.63	0.00	0.00	0.00
2,700.00	5.34	331.70	2,695.02	97.68	-52.59	110.94	0.00	0.00	0.00
2,800.00	5.34	331.70	2,794.58	105.87	-57.01	120.25	0.00	0.00	0.00
2,900.00	5.34	331.70	2,894.15	114.07	-61.42	129.56	0.00	0.00	0.00
3,000.00	5.34	331.70	2,993.72	122.27	-65.83	138.87	0.00	0.00	0.00
3,100.00	5.34	331.70	3,093.28	130.47	-70.25	148.18	0.00	0.00	0.00
3,200.00	5.34	331.70	3,192.85	138.67	-74.66	157.49	0.00	0.00	0.00
3,300.00	5.34	331.70	3,292.41	146.86	-79.07	166.80	0.00	0.00	0.00
3,400.00	5.34	331.70	3,391.98	155.06	-83.49	176.11	0.00	0.00	0.00
3,500.00	5.34	331.70	3,491.54	163.26	-87.90	185.42	0.00	0.00	0.00
3,600.00	5.34	331.70	3,591.11	171.46	-92.32	194.73	0.00	0.00	0.00
3,700.00	5.34	331.70	3,690.67	179.65	-96.73	204.04	0.00	0.00	0.00
3,800.00	5.34	331.70	3,790.24	187.85	-101.14	213.35	0.00	0.00	0.00
3,900.00	5.34	331.70	3,889.81	196.05	-105.56	222.66	0.00	0.00	0.00
3,993.88	5.34	331.70	3,983.28	203.74	-109.70	231.40	0.00	0.00	0.00
Start Drop 2.00°									
4,000.00	5.22	331.70	3,989.37	204.24	-109.97	231.96	2.00	-2.00	0.00
4,100.00	3.22	331.70	4,089.10	210.72	-113.46	239.32	2.00	-2.00	0.00
4,200.00	1.22	331.70	4,189.02	214.13	-115.29	243.19	2.00	-2.00	0.00
4,260.99	0.00	0.00	4,250.00	214.70	-115.60	243.84	2.00	-2.00	0.00
EOC hold 0.00° - TG1-Dexter #10									
6,160.99	0.00	0.00	6,150.00	214.70	-115.60	243.84	0.00	0.00	0.00
PBHL-Dexter #10									



Scientific Drilling
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Dexter Federal #10
Company:	COG Operating LLC	TVD Reference:	Ground Elev @ 3651.00ft (Rig.?)
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	Ground Elev @ 3651.00ft (Rig.?)
Site:	Dexter Federal #10	North Reference:	Grid
Well:	Dexter Federal #10	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - 7-7/8" Hole		

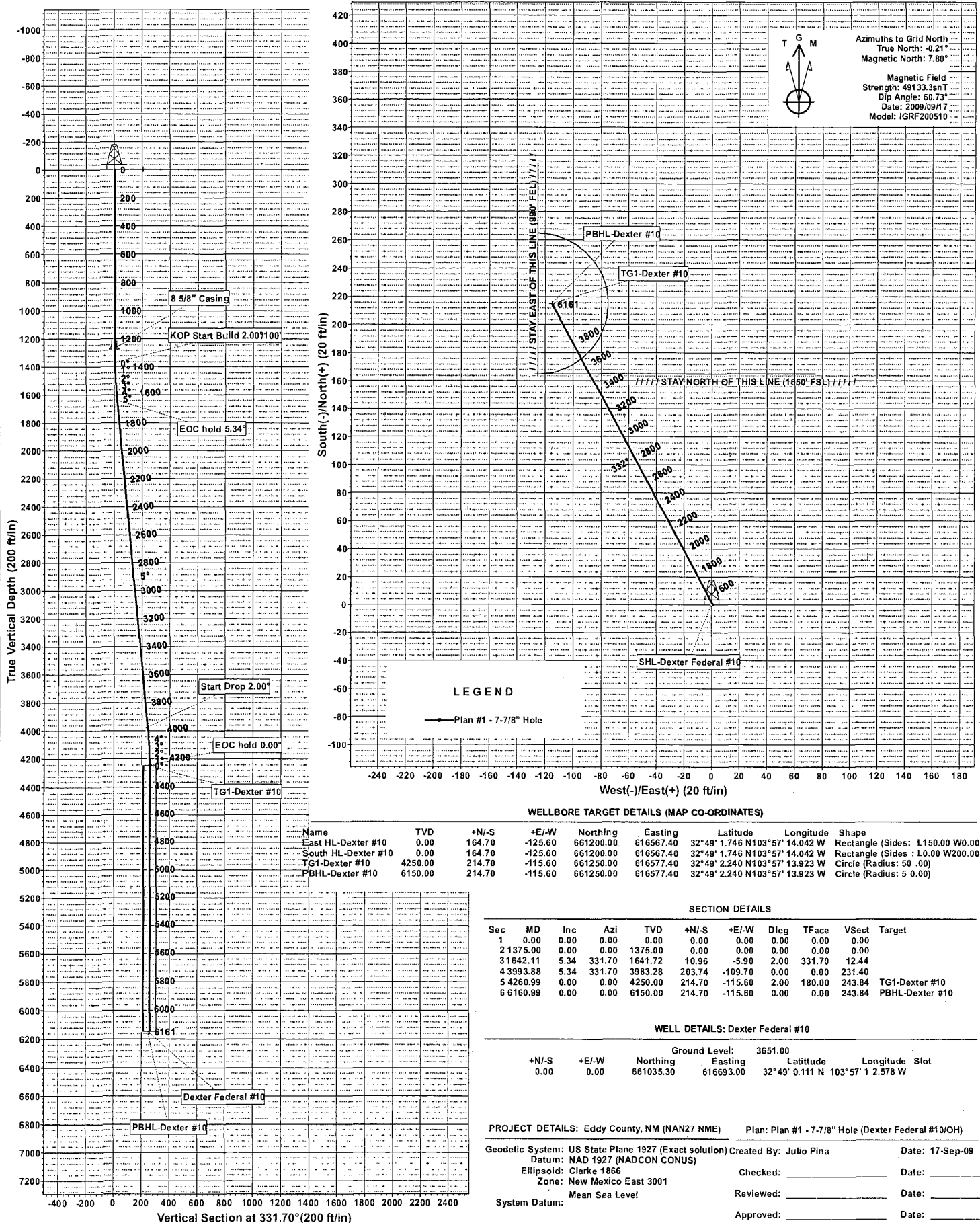
Design Targets:									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
South HL-Dexter #10	0.00	0.00	0.00	164.70	-125.60	661,200.00	616,567.40	32° 49' 1.746 N	103° 57' 14.042 W
- plan misses target center by 207.13ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Rectangle (sides W200.00 H0.00 D0.00)									
East HL-Dexter #10	0.00	0.00	0.00	164.70	-125.60	661,200.00	616,567.40	32° 49' 1.746 N	103° 57' 14.042 W
- plan misses target center by 207.13ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Rectangle (sides W0.00 H150.00 D0.00)									
TG1-Dexter #10	0.00	0.00	4,250.00	214.70	-115.60	661,250.00	616,577.40	32° 49' 2.240 N	103° 57' 13.923 W
- plan hits target center									
- Circle (radius 50.00)									
PBHL-Dexter #10	0.00	0.00	6,150.00	214.70	-115.60	661,250.00	616,577.40	32° 49' 2.240 N	103° 57' 13.923 W
- plan hits target center									
- Circle (radius 50.00)									

Casing Points:				
Measured Depth	Vertical Depth		Casing Diameter	Hole Diameter
(ft)	(ft)	Name	(")	(")
1,275.00	1,275.00	8 5/8" Casing	8-5/8	12-1/4

Plan Annotations:				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
1,375.00	1,375.00	0.00	0.00	KOP Start Build 2.00°/100'
1,642.11	1,641.72	10.96	-5.90	EOC hold 5.34°
3,993.88	3,983.28	203.74	-109.70	Start Drop 2.00°
4,260.99	4,250.00	214.70	-115.60	EOC hold 0.00°



Scientific Drilling for COG Operating LLC
Site: Eddy County, NM (NAN27 NME)
Well: Dexter Federal #10
Wellbore: OH
Design: Plan #1 - 7-7/8" Hole



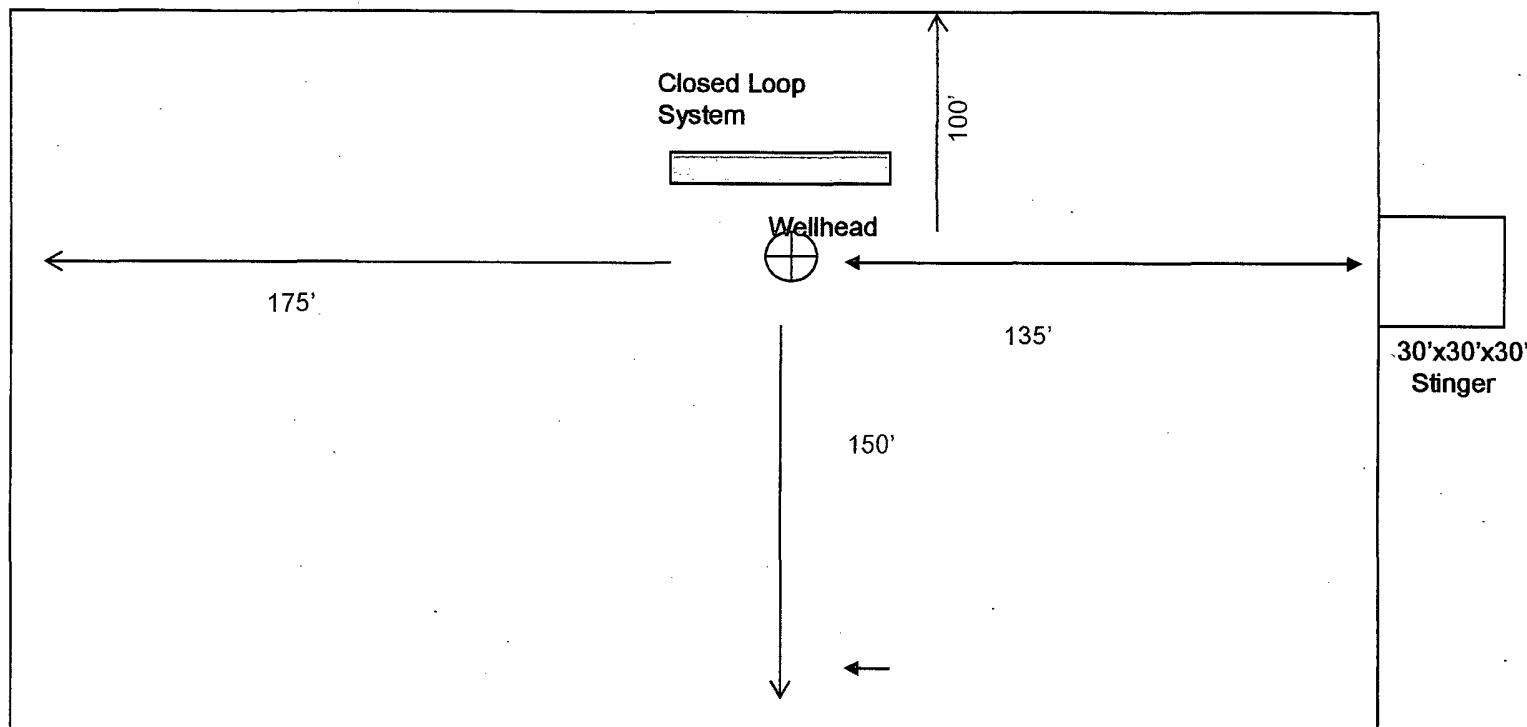
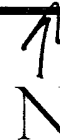


Exhibit 6

COG OPERATING, LLC

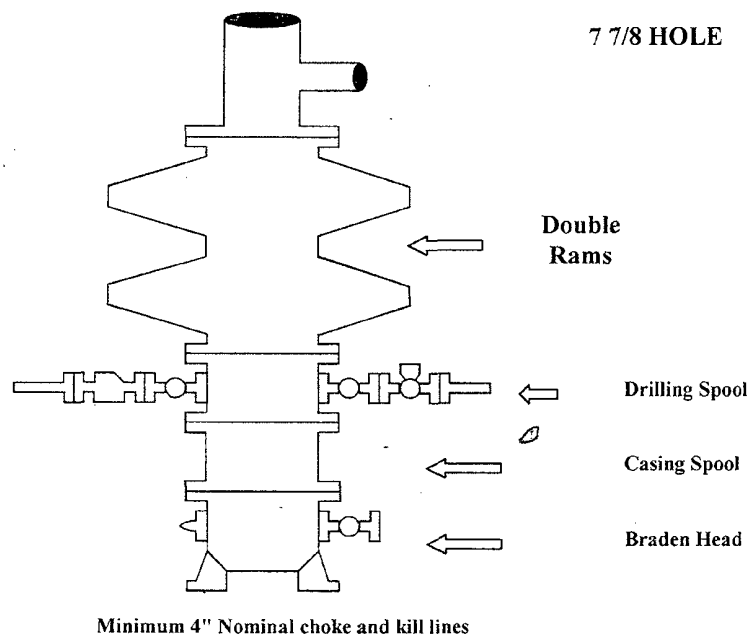
Not To Scale

Rig Layout- Closed Loop System

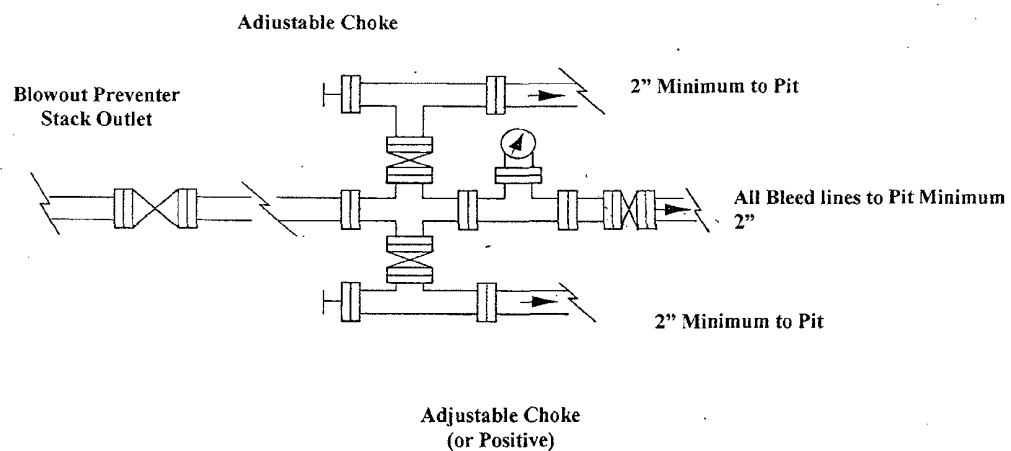
COG Operating LLC

Exhibit #9

BOPE and Choke Schematic



Choke Manifold Requirement (2000 psi WP)
No Annular Required



NOTES REGARDING THE BLOWOUT PREVENTERS**Master Drilling Plan
Eddy County, New Mexico**

1. Drilling nipple to be so constructed that it can be removed without use of a welder through rotary table opening, with minimum I.D. equal to preventer bore.
2. Wear ring to be properly installed in head.
3. Blow out preventer and all fittings must be in good condition, 2000 psi WP minimum.
4. All fittings to be flanged.
5. Safety valve must be available on rig floor at all times with proper connections, valve to be full 2000 psi WP minimum.
6. All choke and fill lines to be securely anchored especially ends of choke lines.
7. Equipment through which bit must pass shall be at least as large as the diameter of the casing being drilled through.
8. Kelly cock on Kelly.
9. Extension wrenches and hands wheels to be properly installed.
10. Blow out preventer control to be located as close to driller's position as feasible.
11. Blow out preventer closing equipment to include minimum 40-gallon accumulator, two independent sources of pump power on each closing unit installation all API specifications.