

Form 3160-3
(April 2004)

HOBBS OCD

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JUL 12 2012

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

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

1a. Type of work ☒ DRILL ☐ REENTER		5 Lease Serial No. NMLC 0029400A
1b. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☐ 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 100 Midland TX 79701		8 Lease Name and Well No. V C Federal #3 <39332>
3b. Phone No. (include area code) (432) 221-0336		9 API Well No. 30-025-40682
4. Location of Well (Report location clearly and in accordance with any State requirements *) At surface SHL: 2260' FSL & 1210' FWL, UL L At proposed prod. zone BHL: 2310' FSL & 990' FWL, UL L		10 Field and Pool, or Exploratory Maljamar; Yeso, West <44500>
14 Distance in miles and direction from nearest town or post office* 2.5 miles south of Maljamar NM		11 Sec, T R M or Blk and Survey or Area Sec 23, T17S, R32E
15 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drng unit line, if any) 1210'	16 No of acres in lease 40	17 Spacing Unit dedicated to this well 40
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft 429'	19 Proposed Depth TVD: 7500' MD: 7511'	20 BLM/BIA Bond No on file NMB000740; NMB000215
21 Elevations (Show whether DF, KDB, RT, GL, etc) 4001' GL	22 Approximate date work will start* 6/30/2012	23 Estimated duration 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 | 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 <i>Kacie Connally</i>	Name (Printed/Typed) Kacie Connally	Date 4-17-12
Title Permitting Tech		
Approved by (Signature) <i>James A. Ames</i>	Name (Printed/Typed) James A. Ames	Date JUL 10 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

K2 07/13/12

Approval Subject to General Requirements
& Special Stipulations AttachedSEE ATTACHED FOR
CONDITIONS OF APPROVAL

JUL 16 2012

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'
Blaine	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
Blaine	5870'	Oil/Gas
Tubb	6810'	Oil/Gas

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.

4. Casing Program

See
COA

Hole Size	Interval	OD Casing	Weight	Grade	Jt., Condition	burst/collapse/tension
17 1/2"	0-720' 960'	13 3/8"	48#	H-40/J-55 hybrid	ST&C/New	6.03/2.578/10.32
11"	0-2100' 235'	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

5. Cement Program *See COA*

13 3/8" Surface Casing: ~~See COA~~

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 ~~770'~~ ^{970'} (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 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.

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

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 nipped 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 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. 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

*Sec
COA*

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:

DEPTH	TYPE	WEIGHT	VISCOSITY	WATERLOSS
0-720' ⁹⁶⁰	Fresh Water	8.5	28	N.C.
720-2100' ²²³⁵	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 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. Based on BHP tests in this area, 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.



COG Operating LLC

Lea County, NM (NAD27 NME)

VC Federal #3

VC Federal #3

OH

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

SHL = 2260' FSL & 1210' FWL

BHL = 2260' FSL & 940' FWL

Top of Paddock Top = 2260' FSL & 940' FWL @ 5600' TVD

Standard Planning Report

09 February, 2012



Scientific Drilling
Directional Drilling Operations



SDI
Planning Report



Database:	EDM-5000-1-Single User Db	Local Co-ordinate Reference:	Well VC Federal #3
Company:	COG Operating LLC	TVD Reference:	GL @ 4001.00usft
Project:	Lea County, NM (NAD27 NME)	MD Reference:	GL @ 4001.00usft
Site:	VC Federal #3	North Reference:	Grid
Well:	VC Federal #3	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2-7-7/8" 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:	VC Federal #3		
Site Position:		Northing:	662,139.90 usft
From:	Map	Easting:	681,899.20 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"
		Latitude:	32° 49' 8.075 N
		Longitude:	103° 44' 28.440 W
		Grid Convergence:	0.32°

Well:	VC Federal #3		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	Ground Level:
			4,001.00 usft

Wellbore:	OH		
Magnetics	Model Name	Sample Date	Declination
	IGRF2010	02/07/12	7.63
			Dip Angle
			60.69
			Field Strength
			48,887

Design:	Plan #2-7-7/8" Hole		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction
			(°)
			269.81

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	
2,444.74	4.89	269.81	2,444.44	-0.03	-10.45	2.00	2.00	0.00	269.81	
5,366.51	4.89	269.81	5,355.56	-0.87	-259.75	0.00	0.00	0.00	0.00	
5,611.25	0.00	0.00	5,600.00	-0.90	-270.20	2.00	-2.00	0.00	180.00	T1-VC Fed #3
7,511.25	0.00	0.00	7,500.00	-0.90	-270.20	0.00	0.00	0.00	0.00	PBHL-VC Fed #3



SDI
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well VC-Federal #3
Company:	COG Operating, LLC	TVD Reference:	GL @ 4001.00usft
Project:	Lea County, NM (NAD27, NME)	MD Reference:	GL @ 4001.00usft
Site:	VC-Federal #3	North Reference:	Grid
Well:	VC-Federal #3	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
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
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									
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP Start DLS 2.00°/100'									
2,300.00	2.00	269.81	2,299.98	-0.01	-1.75	1.75	2.00	2.00	0.00
2,400.00	4.00	269.81	2,399.84	-0.02	-6.98	6.98	2.00	2.00	0.00
2,444.74	4.89	269.81	2,444.44	-0.03	-10.45	10.45	2.00	2.00	0.00
Hold 4.89°									
2,500.00	4.89	269.81	2,499.50	-0.05	-15.16	15.16	0.00	0.00	0.00
2,600.00	4.89	269.81	2,599.14	-0.08	-23.70	23.70	0.00	0.00	0.00
2,700.00	4.89	269.81	2,698.77	-0.11	-32.23	32.23	0.00	0.00	0.00
2,800.00	4.89	269.81	2,798.41	-0.14	-40.76	40.76	0.00	0.00	0.00
2,900.00	4.89	269.81	2,898.04	-0.16	-49.29	49.29	0.00	0.00	0.00
3,000.00	4.89	269.81	2,997.68	-0.19	-57.83	57.83	0.00	0.00	0.00
3,100.00	4.89	269.81	3,097.31	-0.22	-66.36	66.36	0.00	0.00	0.00
3,200.00	4.89	269.81	3,196.95	-0.25	-74.89	74.89	0.00	0.00	0.00
3,300.00	4.89	269.81	3,296.58	-0.28	-83.42	83.42	0.00	0.00	0.00
3,400.00	4.89	269.81	3,396.22	-0.31	-91.96	91.96	0.00	0.00	0.00
3,500.00	4.89	269.81	3,495.85	-0.33	-100.49	100.49	0.00	0.00	0.00
3,600.00	4.89	269.81	3,595.49	-0.36	-109.02	109.02	0.00	0.00	0.00
3,700.00	4.89	269.81	3,695.12	-0.39	-117.55	117.56	0.00	0.00	0.00
3,800.00	4.89	269.81	3,794.76	-0.42	-126.09	126.09	0.00	0.00	0.00
3,900.00	4.89	269.81	3,894.40	-0.45	-134.62	134.62	0.00	0.00	0.00
4,000.00	4.89	269.81	3,994.03	-0.48	-143.15	143.15	0.00	0.00	0.00
4,100.00	4.89	269.81	4,093.67	-0.51	-151.69	151.69	0.00	0.00	0.00
4,200.00	4.89	269.81	4,193.30	-0.53	-160.22	160.22	0.00	0.00	0.00
4,300.00	4.89	269.81	4,292.94	-0.56	-168.75	168.75	0.00	0.00	0.00
4,400.00	4.89	269.81	4,392.57	-0.59	-177.28	177.28	0.00	0.00	0.00
4,500.00	4.89	269.81	4,492.21	-0.62	-185.82	185.82	0.00	0.00	0.00
4,600.00	4.89	269.81	4,591.84	-0.65	-194.35	194.35	0.00	0.00	0.00
4,700.00	4.89	269.81	4,691.48	-0.68	-202.88	202.88	0.00	0.00	0.00
4,800.00	4.89	269.81	4,791.11	-0.70	-211.41	211.42	0.00	0.00	0.00



SDI
Planning Report



Database:	EDM/5000 1 Single User Db	Local Co-ordinate Reference:	Well VC Federal #3
Company:	COG Operating LLC	TVD Reference:	GL @ 4001.00usft
Project:	Lea County NM (NAD27 NME)	MD Reference:	GL @ 4001.00usft
Site:	VC Federal #3	North Reference:	Grid
Well:	VC Federal #3	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2 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)
4,900.00	4.89	269.81	4,890.75	-0.73	-219.95	219.95	0.00	0.00	0.00
5,000.00	4.89	269.81	4,990.38	-0.76	-228.48	228.48	0.00	0.00	0.00
5,100.00	4.89	269.81	5,090.02	-0.79	-237.01	237.01	0.00	0.00	0.00
5,200.00	4.89	269.81	5,189.65	-0.82	-245.54	245.55	0.00	0.00	0.00
5,300.00	4.89	269.81	5,289.29	-0.85	-254.08	254.08	0.00	0.00	0.00
5,366.51	4.89	269.81	5,355.56	-0.87	-259.75	259.75	0.00	0.00	0.00
Start Drop 2.00°/100'									
5,400.00	4.23	269.81	5,388.94	-0.87	-262.41	262.42	2.00	-2.00	0.00
5,500.00	2.23	269.81	5,488.78	-0.89	-268.04	268.04	2.00	-2.00	0.00
5,600.00	0.23	269.81	5,588.75	-0.90	-270.18	270.18	2.00	-2.00	0.00
5,611.25	0.00	0.00	5,600.00	-0.90	-270.20	270.20	2.00	-2.00	801.63
hold 0.00° Top of Paddock T1-VC Fed #3									
5,700.00	0.00	0.00	5,688.75	-0.90	-270.20	270.20	0.00	0.00	0.00
5,800.00	0.00	0.00	5,788.75	-0.90	-270.20	270.20	0.00	0.00	0.00
5,900.00	0.00	0.00	5,888.75	-0.90	-270.20	270.20	0.00	0.00	0.00
6,000.00	0.00	0.00	5,988.75	-0.90	-270.20	270.20	0.00	0.00	0.00
6,100.00	0.00	0.00	6,088.75	-0.90	-270.20	270.20	0.00	0.00	0.00
6,200.00	0.00	0.00	6,188.75	-0.90	-270.20	270.20	0.00	0.00	0.00
6,300.00	0.00	0.00	6,288.75	-0.90	-270.20	270.20	0.00	0.00	0.00
6,400.00	0.00	0.00	6,388.75	-0.90	-270.20	270.20	0.00	0.00	0.00
6,500.00	0.00	0.00	6,488.75	-0.90	-270.20	270.20	0.00	0.00	0.00
6,600.00	0.00	0.00	6,588.75	-0.90	-270.20	270.20	0.00	0.00	0.00
6,700.00	0.00	0.00	6,688.75	-0.90	-270.20	270.20	0.00	0.00	0.00
6,800.00	0.00	0.00	6,788.75	-0.90	-270.20	270.20	0.00	0.00	0.00
6,900.00	0.00	0.00	6,888.75	-0.90	-270.20	270.20	0.00	0.00	0.00
7,000.00	0.00	0.00	6,988.75	-0.90	-270.20	270.20	0.00	0.00	0.00
7,100.00	0.00	0.00	7,088.75	-0.90	-270.20	270.20	0.00	0.00	0.00
7,200.00	0.00	0.00	7,188.75	-0.90	-270.20	270.20	0.00	0.00	0.00
7,300.00	0.00	0.00	7,288.75	-0.90	-270.20	270.20	0.00	0.00	0.00
7,400.00	0.00	0.00	7,388.75	-0.90	-270.20	270.20	0.00	0.00	0.00
7,500.00	0.00	0.00	7,488.75	-0.90	-270.20	270.20	0.00	0.00	0.00
7,511.25	0.00	0.00	7,500.00	-0.90	-270.20	270.20	0.00	0.00	0.00
PBHL-VC Fed #3									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
T1-VC Fed #3	0.00	0.00	5,600.00	-0.90	-270.20	662,139.00	681,629.00	32° 49' 8.082 N	103° 44' 31.606 W
- plan hits target center									
- Point									
PBHL-VC Fed #3	0.00	0.00	7,500.00	-0.90	-270.20	662,139.00	681,629.00	32° 49' 8.082 N	103° 44' 31.606 W
- plan hits target center									
- Circle (radius 50.00)									



SDI
Planning Report



Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Well VC Federal #3
Company:	COG Operating LLC	TVD Reference:	GL @ 4001.00usft
Project:	Lea County, NM (NAD27 NME)	MD Reference:	GL @ 4001.00usft
Site:	VC Federal #3	North Reference:	Gnd
Well:	VC Federal #3	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2 7-7/8" Hole		

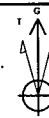
Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name		Casing Diameter (")	Hole Diameter (")
2,100.00	2,100.00	8 5/8"		8-5/8	12-1/4

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,611.25	5,600.00	Top of Paddock		0.00	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
2,200.00	2,200.00	0.00	0.00	KOP Start DLS 2.00°/100'	
2,444.74	2,444.44	-0.03	-10.45	Hold 4.89°	
5,366.51	5,355.56	-0.87	-259.75	Start Drop 2.00°/100'	
5,611.25	5,600.00	-0.90	-270.20	hold 0.00°	

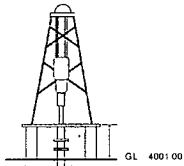


VC Federal #3
Lea County, NM (NAD27 NME)
Northing (Y) 662139.90
Easting (X) 681899.20
Plan #2 7-7/8" Hole

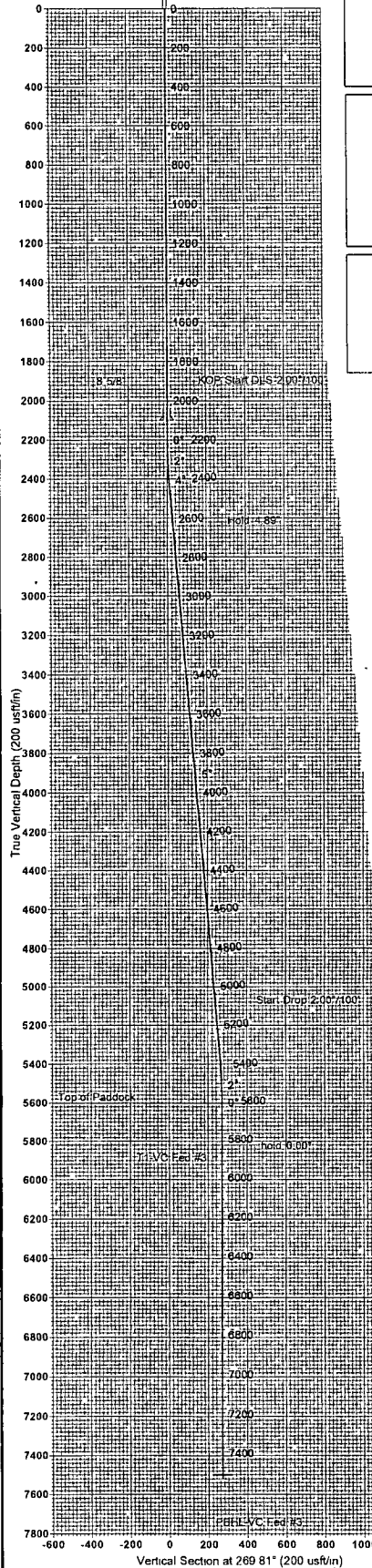


Azimuth to Grid North
True North 0.32°
Magnetic North 7.31°
Magnetic Field
Strength 48887.0nT
Dip Angle 66.69°
Date 03/07/2012
Model IGRF2010

To convert a Magnetic Direction to a Grid Direction: Add 7.31°
To convert a True Direction to a Grid Direction: Subtract 0.32°



GL 4001.00



WELL DETAILS VC Federal #3

	+N-S	+E-W	Northing	Ground Level	4001.00	Latitude	Longitude	Slot
	0.00	0.00	662139.90	681899.20		32° 49' 8.075" N	103° 44' 28.440" W	

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VFace	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	2444.74	4.89	269.81	2444.44	-0.03	-10.45	2.00	269.81	10.45	
4	5368.51	4.82	269.81	5355.56	-0.87	258.75	0.00	0.00	258.75	
5	5611.25	0.00	0.00	5600.00	0.00	-270.20	2.00	180.00	270.20	T1-VC Fed #3
6	7511.25	0.00	0.00	7500.00	-0.90	-270.20	0.00	0.00	270.20	PBHL-VC Fed #3

DESIGN TARGET DETAILS

Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude	Shape
T1-VC Fed #3	5600.00	-0.90	-270.20	662139.00	681829.00	32° 49' 8.082" N	103° 44' 31.606" W	Point
PBHL-VC Fed #3	7500.00	0.90	-270.20	662139.00	681829.00	32° 49' 8.082" N	103° 44' 31.606" W	Circle (Radius 50.00)

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
5900.00	5611.25	Top of Paddock	0.00	

CASING DETAILS

TVD	MD	Name	Size
2100.00	2100.00		8 5/8" 8-5/8"

SITE DETAILS VC Federal #3

Site Centre Northing 662139.90
Easting 681899.20
Positional Uncertainty 0.00
Convergence 0.22
Local North Grid

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

Local Origin: Well VC Federal #3 Grid North

Latitude 32° 49' 8.075" N
Longitude 103° 44' 28.440" W

Grid East 681899.20
Grid North 662139.90
Scale Factor 1.000

Geomagnetic Model IGRF2010

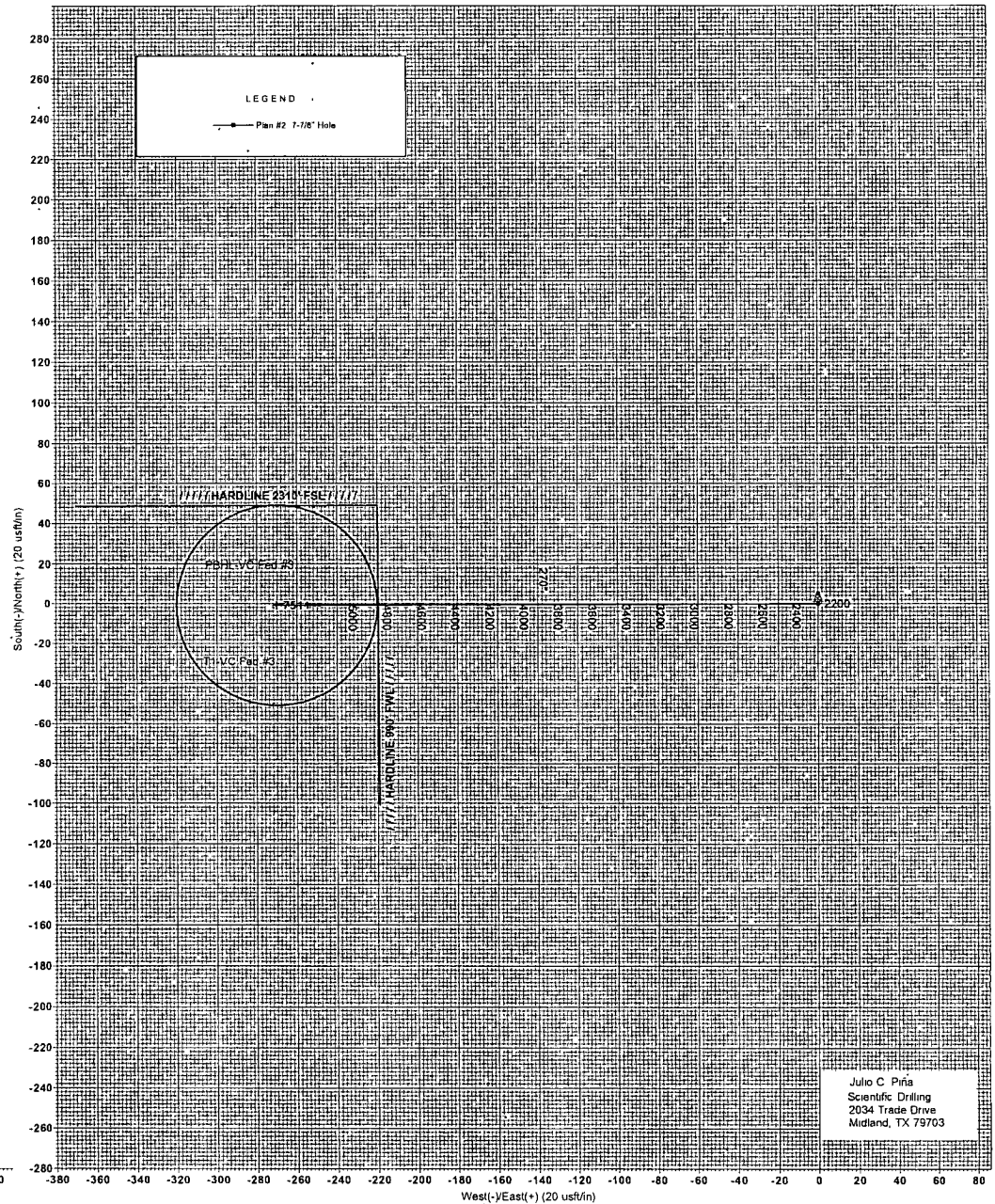
Sample Date 01 Feb '12
Magnetic Declination 7.63°
Dip Angle from Horizontal 66.69°
Magnetic Field Strength 48887

To convert a Magnetic Direction to a Grid Direction: Add 7.31°
To convert a True Direction to a Grid Direction: Subtract 0.32°

PROJECT DETAILS Lea County, NM (NAD27 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



Julio C. Peña
Scientific Drilling
2034 Trade Drive
Midland, TX 79703

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

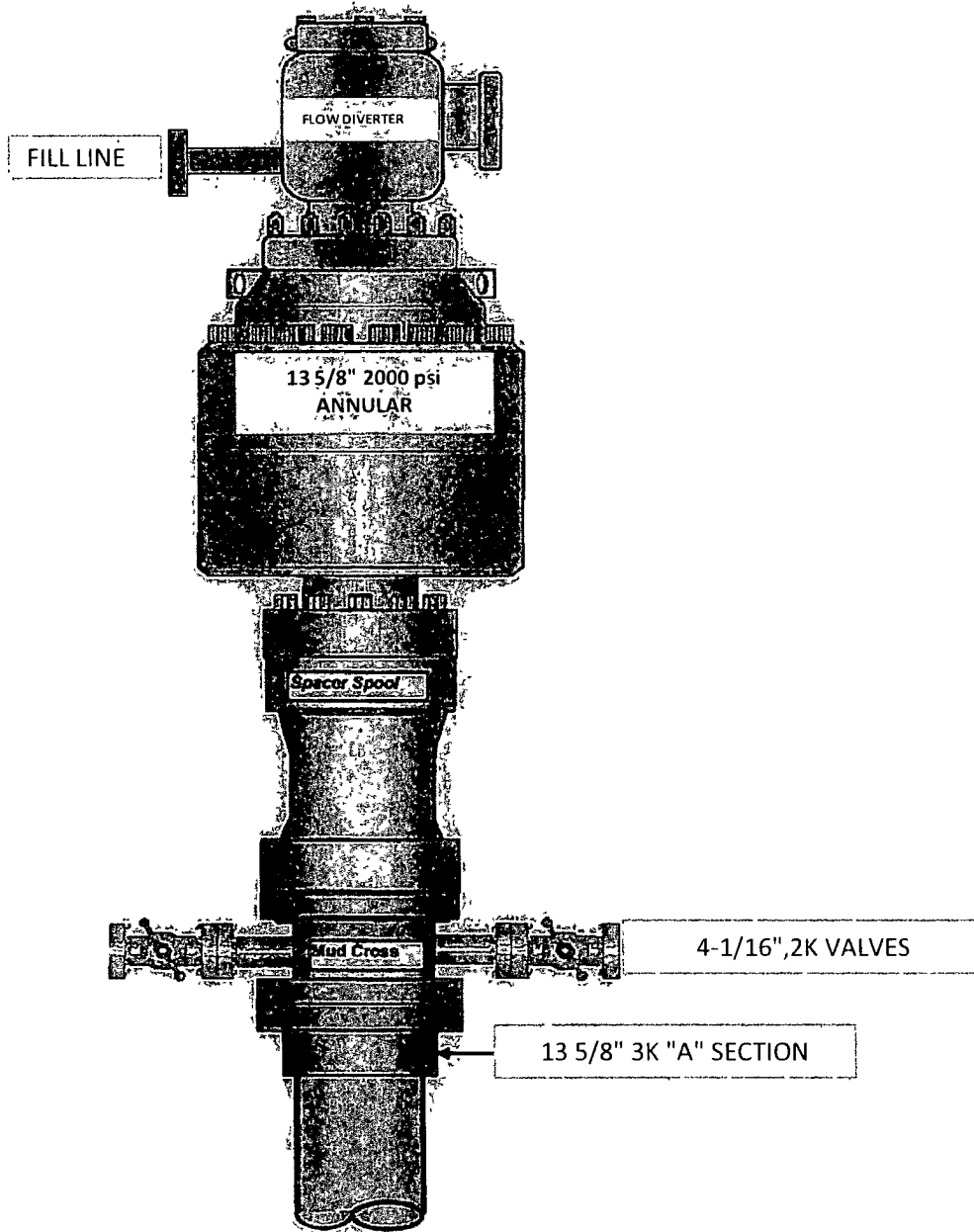
DIRECTIONAL PLAN VARIANCE REQUEST

V C FEDERAL #3
LEA, NM

SHL	2260 FSL, 1210 FWL	Sec 23, T17S, R32E, Unit L
BHL	2310 FSL, 990 FWL	Sec 23, T17S, R32E, Unit L

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.

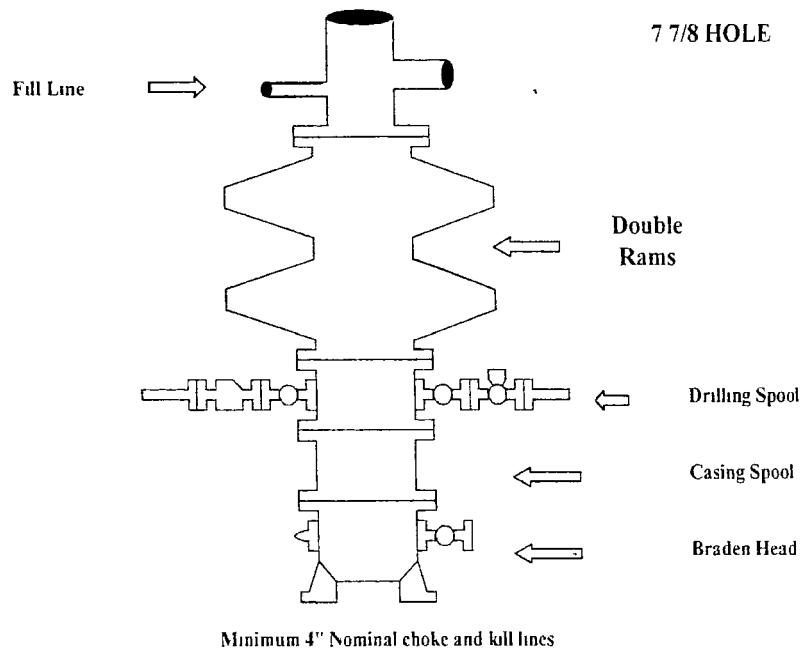
13 5/8" 2K ANNULAR



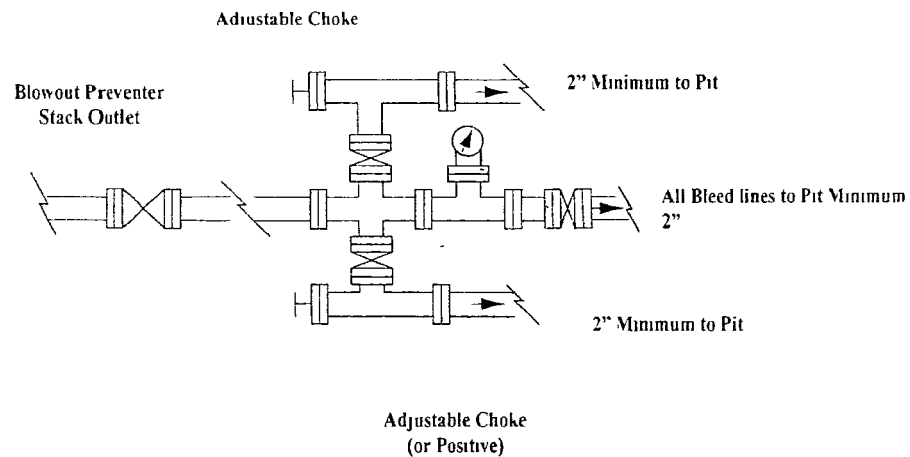
COG Operating LLC

Exhibit #9

BOPE and Choke Schematic



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