

OCD-ARTESIA

Form 3160-3
(April 2004)

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: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5 Lease Serial No. NMLC-028731B
1b. Type of Well: <input type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input checked="" 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 100 Midland TX 79701		8. Lease Name and Well No. Empire Federal SWD #5
3b Phone No. (include area code) (432) 685-4384		9. API Well No. 30-015-39446
4 Location of Well (Report location clearly and in accordance with any State requirements.) At surface 850' FNL & 2310' FEL (UL B) At proposed prod zone		10. Field and Pool, or Exploratory SWD; Cisco
14 Distance in miles and direction from nearest town or post office* 4 miles South East of Loco Hills, NM		11 Sec, T R M. or Blk and Survey or Area Sec 10, T17S, R29E
15 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drug unit line, if any) 850'	16. No. of acres in lease 1480	17 Spacing Unit dedicated to this well N/A
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft 700'	19. Proposed Depth 9200'	20 BLM/BIA Bond No on file NMB000740
21 Elevations (Show whether DF, KDB, RT, GL, etc.) 3601.4' GL	22 Approximate date work will start* 07/31/2011	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.
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) Kelly J. Holly	Date 06/01/2011
Title Permitting Tech		

Approved by (Signature) /s/ Don Peterson	Name (Printed/Typed) CARLSBAD FIELD OFFICE	Date AUG 30 2011
Title FIELD MANAGER		

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.

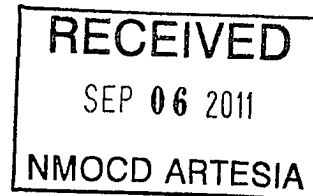
APPROVAL FOR TWO YEARS

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)

SWD-1283

K# 09123/11



Roswell Controlled Water Basin

**SEE ATTACHED FOR
CONDITIONS OF APPROVAL**

**Approval Subject to General Requirements
& Special Stipulations Attached**

SWD WELL DRILLING PROGRAM

1. Geologic Name of Surface Formation
Quaternary

2. Estimated Tops of Important Geologic Markers:

Quaternary	Surface
Rustler	120'
T/Salt	420'
B/Salt	700'
Yates	930'
Seven Rivers	1,200'
Queen	1,800'
Grayburg	2,235'
San Andres	2,500'
Glorietta	3,890'
Paddock	3,980'
Blaine	4,450'
Tubb	5,375'
Drinkard	5,460''
Wolfcamp	7,190'
Cisco	8,135'
Cisco Reef	8,300'
Casing Setting Pt.	8,350'
Base Cisco Reef	8,920' and TD

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

Fresh Water	None	
Grayburg	2,155'	Oil/Gas
San Andres	2,425'	Oil/Gas
Paddock	3,915'	Oil/Gas
Blaine	4,400'	Oil/Gas

No other formations are expected to give up oil, gas in measurable quantities. No interval capable of fresh water production is expected at any point in the well. Any salt and/or hydrocarbon bearing intervals will be protected by setting 9 5/8" casing to 2,600' and circulating cement back to the surface. All other zones above TD will be cased with 7" casing and that casing cemented to surface.

4. Conduct of Drilling Operations

It is proposed to drill and complete this well as an Open Hole Completion in the Cisco Reef. This is the reasoning for the Open Hole Completion proposal. Several wells in this area have drilled into a high pressure water flow some 50 or so feet below the interval of massive loss of circulation that is present in the Cisco Reef interval. This interval of massive loss of circulation is the main objective of all wells permitted as SWD in this area of Eddy County, NM. Two things happen when the interval of massive loss circulation is encountered. Primary cementing is very adversely affected. It is hard to the point of impossible to obtain a 100% cement bond across this interval and the interval may take enough cement that remedial cement jobs are required. Remedial cement jobs in the long string are more expensive and much less effective than primary cementing. Setting 50' into the top of the reef allows for as competent a formation for the casing shoe as possible. Therefore the Open Hole completion provides for better primary cement and also a better seal of any fluids from upper zones due to the better formation at the casing shoe.

5. Casing Program

*
 See
 COA

Hole Size	Interval	OD	Weight (ppf)	Grade	Joint	Condition
24"	0-40'	20"	94	F-25	ST & C	Used
17.5"	200'	13 3/8"	48	H-40	ST & C	New
12.25"	0-2,600	9 5/8"	2,600' of 36 ppf	J-55	ST & C	New
8.75"	0-8,350'	7"	26 ppf	8,350' of L-80	LT & C	New

Note: The 7" casing shoe will be drilled out with a 6 to 6 1/2" bit and the well drilled OH to the zone of massive loss of circulation. This drill out provides for complete cement integrity above the Casing Setting Point at 8,350' and protects all formations above the Casing Setting Point from disposed fluids.

Casing Design Factors, Minimums

All casing strings are designed to meet or exceed the following Design or Safety factors.

Factor	Minimum
Burst	1.000
Collapse	1.125
Joint-Strength	1.800
Body Strength	2.000

6. Cement Program:

Hole volume in cu ft will be adjusted to Open Hole Caliper log in field
Cement volumes for all casing strings are designed to bring the cement
to surface.

See COA

String: <u>Surface</u>				Hole		Calculated	Slurry	Yield	Pump	
Hole Sz	Csg Sz, OD	Footage	cu ft / ft	cu ft	excess	cu ft	#	cu ft / sx	sxs*	Stage
17 1/2"	13 3/8"	200	0.6946	139	100.00%	278	1	1 3500	210	Single
Total Depth: <u>200</u>				Total Hole cu ft:		278				
				Total Cmt cu ft:		284				

String: <u>Intermediate</u>				Hole		Calculated	Slurry	Yield	Pump	
Hole Sz	Csg Sz, OD	Footage	cu ft / ft	cu ft	excess	cu ft	#	cu ft / sx	sxs*	Stage
ID 13 3/8"	9 5/8"	200	0.3765	75	35.00%	102	2	2 1000	435	Lead
12 1/4"	9 5/8"	2,400	0.3132	689	50.00%	1,033	3	1 3400	230	Tail
Total Depth: <u>2,600</u>				Total Hole cu ft		1,135				
				Total Cmt cu ft		1,222				

String: <u>Long String</u>				Hole		Calculated	Slurry	Yield	Pump	
Hole Sz	Csg Sz, OD	Footage	cu ft / ft	cu ft	excess	cu ft	#	cu ft / sx	sxs*	Stage
ID 9 5/8"	7"	2,400	0.1668	400	35.00%	540				
8 3/4"	7"	3,600	0.1503	541	50.00%	812	4	1 9900	675	Lead
8 3/4"	7"	1,000	0.1503	150	50.00%	225	5	1.1700	225	Tail
8 3/4"	7"	1,350	0.1503	203	50.00%	304	5	1 1700	260	Below DV Tool
Total Depth: <u>8,350</u>				Total Hole cu ft.		1,982				
DV tool set at 7,000'				Total Cmt cu ft		1,911				

* Sxs rounded to nearest 10 sxs

Slurry #	Composition	Density ppg	Yield cu ft / sx
1	CLASS C + 2% CACL2 + 0.25% De foamer	14.300	1 350
2	CLASS C 35/65 + 6% BENTONITE + 0.25% De Foamer + 5% SALT (BWOW)	12.400	2 100
3	CLASS C + 1% CACL2 + 0.25% De Foamer	14.300	1 340
4	CLASS H 35/65 + 6% BENTONITE + 0.55% Fl. Loss Add + 0.1% Dispersant + 0.25% De Foamer	12.400	1 990
5	CLASS H + 1% Fl Loss Add + 0.3% Dispersant + 0.15% Accelerator + 0.1% Temp Add + 0.25% De Foamer	15.700	1.170

7. Minimum Specifications for Pressure Control

** See COA*

Must be A 3M system

The blowout preventer equipment (BOP) shown in Exhibit #9 will consist of a double ram-type (3000 psi WP) preventer, and ~~in some cases possibly a 3000 psi Hydraulic 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 3000 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~~

Intermediate Hole Design is 12 1/4" & Casing is 9 5/8"

Casing is 9 5/8"

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 3000 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 3000 psi WP rating.

* See COA

No
Variance

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.

8. 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
0-200'	Fresh Water, spud	8.6-9.2	32-34	N.C.
200-2600	Saturated Brine	9.8-10.1	28-30	N.C.
2600 - TD	Cut Brine	8.7 - 9.3	28	12 to Log

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.

9. 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.

10. Logging, Testing and Coring Program

* See COA

- A. The electric logging program will consist of GR-Dual Laterolog, Spectral Density, Dual Spaced Neutron, and CSNG Log and will be run from TD to 9 5/8" casing shoe and Gamma Ray from 9 5/8" to base 13 3/8".
- B. Drill Stem test is not anticipated.
- C. No conventional coring is anticipated.
- * See COA D. Zones considered for injection may be acidized. These zones will be swabbed to insure there are no hydrocarbons present prior to injection operations.

11. Abnormal Conditions, Pressure, Temperatures and Potential Hazards

No abnormal pressures or temperatures are anticipated. The estimated bottom hole at TD is 125 to 140 degrees and the estimated maximum bottom hold pressure is 4,038 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.

12. Anticipated Starting Date and Duration of Operations

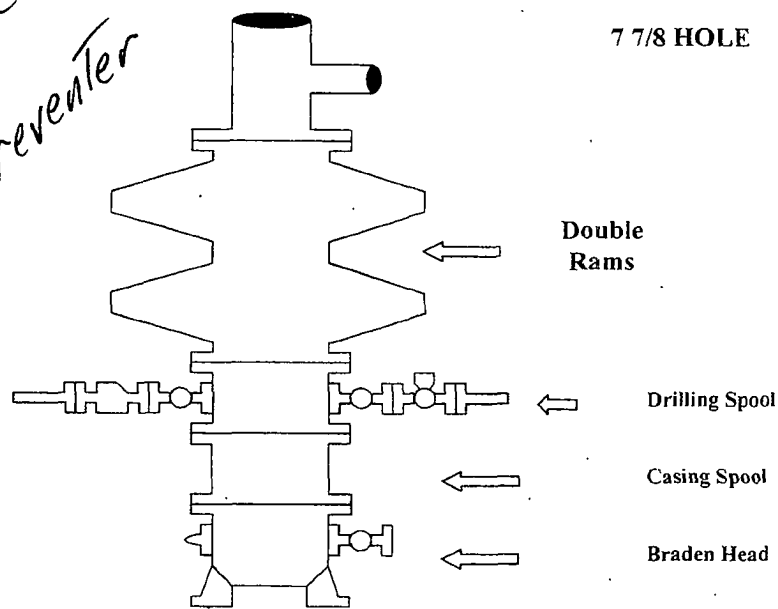
Road and location work will not begin until approval has been received from the BLM. Once commenced drilling operations should take 20 days. Completion operations should only require 10 or fewer days.

COG Operating LLC

Exhibit #9

BOPE and Choke Schematic

*3 M System
With Annular preventer*

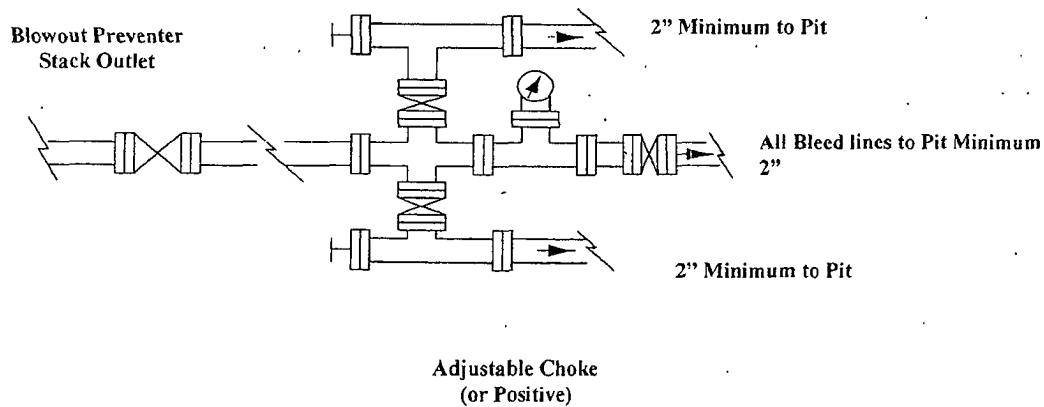


Minimum 4" Nominal choke and kill lines

Choke Manifold Requirement (2000 psi WP)
No Annular Required

3 M System

Adjustable Choke



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.

DISTRICT I --- CHECKLIST FOR INTENTS TO DRILL

Operator COG OPERATING LLC OGRID # 229137
 Well Name & # 38152 ~~SWD~~ EMPIRE FEDERAL SWD #5 Surface Type (F) (S) (P)
 Location: UL B, Sect 10, Township 17 s, RNG 29 e, Sub-surface Type (F) (S) (P)

A. Date C101 rec'd / / C101 reviewed / /

B. 1. Check mark, Information is OK on Forms: .

OGRID X, BONDING FED, PROP CODE X, WELL # X, SIGNATURE

2. Inactive Well list as of: 9/23/11 # wells 3016 # Inactive wells 8

a. District Grant APD but see number of inactive wells:

No letter required X; Sent Letter to Operator , to Santa Fe

3. Additional Bonding as of: 9/23/11

a. District Denial because operator needs addition bonding:

No Letter required X; Sent Letter to Operator , To Santa Fe

b. District Denial because of Inactive well list and Financial Assurance:

No Letter required X; Sent Letter to Operator , To Santa Fe

C. C102 YES , NO , Signature

1. Pool SWD CUSCO, Code 86099

a. Dedicated acreage , What Units

b. SUR. Location Standard ; Non-Standard Location

c. Well shares acres: Yes , No , # of wells plus this well #

2. 2nd. Operator in same acreage, Yes , No X

Agreement Letter , Disagreement letter

3. Intent to Directional Drill Yes , No X

a. Dedicated acreage , What Units

b. Bottomhole Location Standard , Non-Standard Bottomhole

4. Downhole Commingle: Yes , No X

a. Pool #2 , Code , Acres

Pool #3 , Code , Acres

Pool #4 , Code , Acres

5. POTASH Area Yes , No X

D. Blowout Preventer Yes X, No

E. H2S Yes X, No

F. C144 Pit Registration Yes X, No

G. Does APD require Santa Fe Approval:

1. Non-Standard Location: Yes , No X, NSL #

2. Non-Standard Proration: Yes , No X, NSP #

3. Simultaneous Dedication: Yes , No X, SD #

Number of wells Plus #

4. Injection order Yes , No X; PMX # or WFX #

5. SWD order Yes , NO ; SWD # 1283

6. DHC from SF ; DHC-HOB ; Holding

7. OCD Approval Date / /

API #30-0 16-39446

8. Reviewers